S. C. Irving

PRICE ONE SHILLING.

THE

ILLUSTRATED LONDON ALMANACK

FOR

1860

CONTAINING CALENDAR, FESTIVALS, ANNIVERSARIES, TIMES OF HIGH WATER, AND OF THE RISING AND SETTING OF THE SUN, MOON, AND PLANETS FOR EACH MONTH;

GROUPS OF INSECTS AND BUTTERFLIES, PRINTED IN COLOURS,

DRAWN BY T. D. SCOTT, WITH DESCRIPTIVE LETTERPRESS BY J. S. MARTIN;

TWELVE ORIGINAL DESIGNS AS HEADINGS TO THE CALENDAR; TWELVE FINE-ART ENGRAVINGS;

ALSO,

ASTRONOMICAL DIAGRAMS OF REMARKABLE PHENOMENA, PRINTED IN COLOURS;
WITH EXPLANATORY NOTES;

LISTS OF GOVERNMENT OFFICES AND OFFICERS, CITY OFFICERS, DIRECTORS OF THE BANK OF ENGLAND, AND ACTS OF PARLIAMENT PASSED DURING LAST SESSION;

THE QUEEN AND ROYAL FAMILY, FOREIGN AMBASSADORS, LAW COURTS, LAW AND UNIVERSITY TERMS, STAMPS AND TAXES, POSTAL AND PASSPORT REGULATIONS; ETC., ETC., ETC.

LONDON: PUBLISHED AT THE OFFICE OF THE ILLUSTRATED LONDON NEWS, 198, STRAND.

JANUARY

SKATING.

Day of Month	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN: Rises at London.	SUN: Souths.	SUN: Sets at London.	MOON: Rises London.	MOON: Souths.	MOON: Sets London.	Age.	HIGH WATER AT: London Bridge.	HIGH WATER AT: Liverpool Dock.
			H. M.	H. M. S.	H. M.	Morn. H. M.	Aftern. H. M.	Morn. H. M.	Dys	Morn. H. M.	Aftern. H. M.	Morn. H. M.	Aftern. H. M.
1	S	1st S. a. CHRIST.	8 8	12 3 37	3 59	11 14	6 2	—	8	6 50	7 13	3 51	4 14
2	M	[*Circumcision*	8 8	12 4 5	4 0	11 26	6 45	1 10	9	7 36	8 3	4 41	5 10
3	Tu	Archbishop of Paris [assassinated, 1857	8 8	12 4 33	4 1	11 43	7 33	2 24	10	8 32	9 4	5 42	6 16
4	W	Day breaks 6h. 3m.	8 8	12 5 1	4 2	Aftern.	8 25	3 42	11	9 38	10 14	6 52	7 29
5	Th	Transfer Day	8 8	12 5 28	4 3	0 39	9 23	5 1	12	10 51	11 26	8 4	8 38
6	F	*Epiphany*	8 7	12 5 55	4 5	1 27	10 24	6 17	13	—	0 0	9 8	9 35
7	S	Penny Post established, 1840	8 7	12 6 21	4 6	2 32	11 28	7 22	14	0 30	0 57	10 1	10 28
8	S	1st S. aft. EPIPH.	8 7	12 6 47	4 7	3 54	Morn.	8 12	○	1 23	1 50	10 53	11 17
9	M	Plough Monday	8 6	12 7 12	4 9	5 24	0 31	8 47	16	2 15	2 39	11 42	—
10	Tu	Twilight ends 6h. 13m.	8 6	12 7 37	4 10	6 57	1 30	9 14	17	3 4	3 27	0 5	0 28
11	W	Hilary Terms begins	8 5	12 8 1	4 11	8 27	2 26	9 32	18	3 50	4 12	0 50	1 12
12	Th	Day breaks 6h. 2m.	8 4	12 8 25	4 13	9 54	3 18	9 49	19	4 34	4 58	1 36	1 59
13	F	Cambridge Lent Term begins	8 4	12 8 48	4 14	11 19	4 7	10 4	20	5 21	5 43	2 21	2 43
14	S	Oxford Lent Term begins	8 3	12 9 10	4 16	Morn.	4 56	10 18	21	6 5	6 27	3 5	3 27
15	S	2nd S. aft. EPIPH.	8 2	12 9 32	4 17	0 41	5 45	10 35	☾	6 49	7 13	3 51	4 16
16	M	Battle of Corunna, 1809	8 1	12 9 53	4 19	2 4	6 35	10 55	23	7 38	8 6	4 44	5 17
17	Tu	Twilight ends 6h. 22m.	8 0	12 10 13	4 20	3 25	7 26	11 20	24	8 39	9 15	5 53	6 32
18	W	*Prisca*	8 0	12 10 33	4 22	4 41	8 20	11 54	25	9 54	10 34	7 12	7 54
19	Th	Day breaks 5h. 57m.	7 59	12 10 52	4 24	5 48	9 14	Aftern.	26	11 16	11 56	8 34	9 9
20	F	*Fabian* [Americ. Independence estab.	7 58	12 11 11	4 25	6 42	10 8	1 37	27	—	0 31	9 38	10 4
21	S	*Agnes*	7 56	12 11 28	4 27	7 22	11 0	2 43	28	1 0	1 26	10 28	10 48
22	S	3rd S. aft. EPIPH.	7 54	12 11 45	4 29	7 52	11 49	3 54	29	1 50	2 10	11 7	11 26
23	M	[*Vincent*	7 54	12 12 1	4 30	8 14	Aftern.	5 7	●	2 29	2 48	11 44	—
24	Tu	India Mutiny com., 1857	7 53	12 12 16	4 32	8 31	1 19	6 18	2	3 6	3 23	0 1	0 17
25	W	Princess Royal mar., 1858	7 52	12 12 31	4 34	8 45	2 0	7 28	3	3 39	3 54	0 32	0 47
26	Th	Day breaks 5h. 50m.	7 50	12 12 45	4 36	8 57	2 39	8 37	4	4 9	4 25	1 3	1 18
27	F	Twilight ends 6h. 37m.	7 49	12 12 57	4 37	9 8	3 18	9 45	5	4 40	4 55	1 33	1 48
28	S	Battle of Aliwal, 1846	7 48	12 13 9	4 39	9 19	3 58	10 54	6	5 10	5 25	2 3	2 18
29	S	4th S. aft. EPIPH.	7 47	12 13 21	4 41	9 33	4 40	Morn.	7	5 40	5 55	2 33	2 50
30	M	Charles I. beheaded	7 45	12 13 31	4 43	9 47	5 25	0 6	8	6 12	6 29	3 7	3 27
31	Tu	Hilary Term ends	7 43	12 13 41	4 44	10 6	6 13	1 20	☽	6 49	7 10	3 48	4 10

PLANETS	Day of M.	Rises H. M.	South. H. M.	Set. H. M.
Mercury.	1	6 15 M	10 25 M	2 35 A
	6	6 24	10 27	2 30
	11	6 36	10 34	2 31
	16	6 50	10 43	2 36
	21	7 3	10 54	2 47
	26	7 11	11 7	3 3
Venus.	1	9 36	1 45 A	5 55
	6	9 32	1 51	6 11
	11	9 26	1 56	6 27
	16	9 19	2 1	6 44
	21	9 11	2 5	7 0
	26	9 3	2 9	7 16
Mars.	1	3 9	7 57 M	0 45
	6	3 6	7 50	0 34
	11	3 3	7 42	0 18
	16	3 3	7 35	0 7
	21	3 0	7 27	11 54 M
	26	2 58	7 20	11 42
Jupiter.	1	4 43 A	0 54	9 0
	6	4 20	0 31	8 38
	11	3 57	0 8	8 15
	16	3 34	11 42 A	7 54
	21	3 10	11 19	7 33
	26	2 48	10 57	7 11
Saturn.	1	7 51	3 13 M	10 31
	6	7 30	2 52	10 10
	11	7 9	2 32	9 51
	16	6 48	2 11	9 30
	21	6 26	1 50	9 10
	26	6 4	1 29	8 50
Uranus.	1	1 28	9 27 A	5 30
	6	1 8	9 7	5 10
	11	0 47	8 46	4 48
	16	0 28	8 26	4 28
	21	0 8	8 6	4 8
	26	11 48 M	7 46	3 48

THE LATE MR. BRUNNEL, C.E.

ISAMBARD KINGDOM BRUNEL, son of the constructor of the Thames Tunnel, was born at Portsmouth in 1806, when his father was engaged in erecting the block machinery for the Dockyard. He was taken while quite young to France, and finished his education at the College Henri IV. at Caen. He commenced practical engineering in 1826, under his father, at the Thames Tunnel, of which work he was resident engineer Being the last to quit his post, he was more than once in danger from the frequent breaking in of water during the progress of the excavations, and only saved himself by swimming. The final irruption of 1828, when one man was drowned, surprised him 600 feet from the end of the tunnel; he was borne along by the stream, and rose to the surface near the top of the shaft.

Mechanical and railway engineering, and the construction of machinery or locomotives and steam navigation, have been the special objects of Mr. Brunel's study. For ten years he laboured in the experiments instituted by his father to employ carbonic acid gas as a motive power. He was designer and civil engineer of the *Great Western*, the first steamship built to cross the Atlantic; of the *Great Britain;* of other large vessels and of the *Great Eastern*. He has been engaged on the docks at some of our outports; among which the most important are the improvement of Bristol Docks, Cardiff, and the construction of the Old North Sunderland Dock.

Mr. Brunel was appointed engineer to the Great Western Railway in 1833; and under his direction have all the tunnels, bridges, and other works been constructed on that line and its branches and connections, including the Bristol and Exeter, South Devon, West Cornwall, Birmingham and Oxford, and others.

The Hungerford Suspension Foot-bridge across the Thames at London was also erected by Mr. Brunel. It has the longest span in England. He took part in the floating and raising of the Conway and Britannia

THE LATE MR. BRUNEL.—FROM "THE ILLUSTRATED LONDON NEWS."

ub ular bridges—operations not less remarkable for their novelty and magnitude than for the friendly co-operation of engineers by whom they were successfully accomplished. He set out and conducted the works of the Tuscan portion of the Sardinian Railway; and had the entire charge of establishing and fitting the Renkioi hospitals on the Dardanelles, necessitated by the late war with Russia. These hospitals will accommodate 3000 patients; and as regards comfort, artificial ventilation, warming, baths, &c., and special adaptation to their purpose, they are not excelled by the best London hospitals. An abundant supply of water is aid on from the hills, and railways afford easy carriage from the landing-places on the shore into the several wards.

Mr. Brunel was elected a Fellow of the Royal Society in 1830, and was chosen on the council in 1814. He was a vice-president of the Institution of Civil Engineers and of the Society of Arts; a Fellow of the Astronomical, Geological, and Geographical Societies; and Chevalier of the Legion of Honour.

The lamented gentleman, whose last important work, the *Great Eastern* steam-ship, has lately occupied so prominent a place in public attention, was carried to his residence in Duke-street, Westminster, from the *Great Eastern* ship, at midday on the 5th of September, 1859, in a very alarming condition, having been seized with paralysis, induced, it was believed, by over mental anxiety. In spite of the most skilful medical attention, he continued to sink, and at half-past ten on Thursday night, the 15th of September, 1859, he died at the comparatively early age of fifty-four years

THE GREAT EASTERN STEAM-SHIP.

AN attempt has been here made to collect as much information as possible on the interesting subject of the "Great Eastern" steam-ship. It has been the object to bring together in a narrative form the past history and the future prospects of an undertaking which it is not too much to say is of national importance in connection with the most wonderful specimen of naval architecture that science and skill have ever devised and created.

From 1802, when an experiment was made on the Forth or Clyde Canal to propel a small vessel by means of a steam-engine, down to the year 1816, year by year, the size of steam vessels was increased, and it was found that every increase of size was followed by increase of speed. The onward march of improvement in this respect was for some time checked owing to the fact that, for long voyages, such as those to India, China, &c. ships of ordinary size could not carry fuel sufficient for the whole voyage and were obliged to make *détours* in their course in order to call at the coaling stations. It was, however, evident that this could only be a question of size, and the problem being, as it was, of the highest importance to the interests of commerce and the progress of the human race, naturally attracted the attention of the scientific, and it was at last solved by the projection of a leviathan ship, large enough to carry coals for the longest voyage which could be undertaken, and yet with sufficient space left to accommodate an enormous number of passengers and a gigantic cargo. It was found on examination that as the larger the vessel the greate

THE "GREAT EASTERN," AT HER MOORINGS.—FROM "THE ILLUSTRATED LONDON NEWS."

could be the proportionate carrying power, so the cost per ton of a vessel of the size projected would be cheaper than that on an ordinary steamer. A company was formed to carry out this design, and capital was raised; and the culminating point of the triumphs of ship-building was reached when, in November, 1857, the Great Eastern was declared ready to be launched. At a cost of £640,000 a vessel was erected, of which the following are the particulars, which cannot but be deemed most interesting to the most casual and the least scientific reader.

The Great Eastern is 20,000 tons larger than any other ship in the world; her length between the perpendiculars is 680 ft.; length on the upper-deck 692 ft.—within twenty-eight feet of double the length of the height of St. Paul's, and more than double the extreme length of the new United States' screw-frigate Niagara, about which the Transatlantics are talking so much. The height from the bottom of the ship to the underside of the planking of the upper deck is 58 ft.; the extreme breadth is 83 ft., or as wide as Pall-mall; the breadth across the paddle-boxes 120 ft., or as broad as Portland-place. Nearly 8000 tons, or 60,000 superficial feet of wrought iron, have been used in the 30,000 plates of her hull. To secure these, upwards of 2,000,000 wrought-iron rivets have been welded in, all inserted and hammered while white hot, and the contraction of the iron in cooling secures the plates with remarkable closeness and rigidity. The floor of the ship is perfectly flat, the keel being turned inwards, and rivetted to the inner ship's keel. The bow and stern have additional strength imparted to them by strong iron decks at those parts. At the bottom the plates are an inch thick, in all other places but three-quarters of an inch. For three feet above the water mark the hull is constructed double (on the cellular principle, adopted in the top and bottom of the Brittania Tubular Bridge), the inner hull or skin, as it is called,

being 2 ft. 10 in. apart from the outer. In this space, at intervals of 6 ft., run longitudinal webs of iron plates, which are again subdivided by transverse plates into spaces of about 6 ft. square. This gives an enormous addition to the strength of the whole frame, and by this construction the danger of collision at sea will be very much lessened, for, should the outer skin be pierced, the inner one remaining uninjured, no damage to either passengers or cargo could ensue, except in very extraordinary circumstances.

The interior of the ship is thus arranged: Running crosswise are twelve water-tight bulkheads or walls, extending the entire height to the upper deck, with no openings below the lower deck; the ship is thus cut off into ten or more compartments, generally about 60 ft. long, any one of which might be filled with water up to the level of the lower deck without flooding any of the others—a matter of great importance in the event of shipwreck. Five of the compartments near the centre of the ship form five complete hotels for passengers; each comprising upper and lower saloons, bedrooms, bar, offices, &c.; and each cut off from all the others by the iron bulkheads. It is as if five hotels, each measuring about 80 ft by 60, and 25 ft. high, were let down into an equal number of vast iron boxes. Vertical longitudinal walls separate each compartment into central saloons, and side-cabins, or bedrooms, and decks separate the height into two series of such rooms.

The upper deck is flushed fore and aft, and consequently affords a promenade of more than a quarter of a mile; it has an iron basis, double and cellular, like the hull, divested of all the annoyance resulting from the shipped water splashing the heels and ruffling the temper of the passengers. The arrangements are planned with an amount of room and comfort for each passenger never attempted in other ships: the upper saloons being 12 ft. in height, and the lower nearly 14 ft. She will carry twenty large boats on deck; some of them are new patents on most ingenious principles. In addition to these, she will also carry, suspended aft of her paddle-boxes, two small screw steamers 100 ft. long each, and of between 60 and 70 tons burden. These will, of course, be raised and lowered by the small auxiliary engines. Both will be kept in all respects perfectly equipped for sea, and may be used for embarking and landing the passengers, with all their luggage, &c., when the ship does not go alongside a wharf. This will be onerous service, for the Great Eastern will be fitted to accommodate 800 first-class passengers, 1500 second-class, and 2500 third-class in all 4800 passengers; or if employed in the transport of troops, she can carry upwards of 10,000 men, in addition to a crew of 400.

STEAM POWER AND ENGINES.

The distinguishing feature in the character of the Great Eastern, in addition to her vast size, is the combined application of steam power, through the paddle-wheel and the screw. The engines are very considerably larger than any hitherto made for marine purposes, and their actual power will be very far greater than their nominal power. The vessel will have ten boilers and five funnels, and each boiler can be cut off from its neighbour, and used or not as desired. The boilers are placed longitudinally along the centre of the ship, and entirely independent of each other. Each boiler (weighing 45 tons) has ten furnaces, and that gives to the whole the large number of 100 furnaces.

The engines for the screw propeller are the largest ever manufactured for marine purposes; they were made by Messrs. James Watt and Co., Soho Works, Birmingham, and will be supplied with steam by six of the boilers, working to a force of 1600 horses, the real strength of the combined engines being 3000 horses.

The screw-propeller, 24 ft in diameter, with four fans or vanes, the largest ever made, is placed in the stern of the vessel, and will be worked in the usual manner. The shaft is 150 ft. in length, weighs 60 tons, and was forged by Messrs. Mare and Co., at Blackwall.

The paddle-wheels will be worked by four engines, constructed by Messrs Scott Russell and Co.; they are direct acting, with oscillating cylinders, each 18 ft. long, and 6 ft. 2 in. in diameter. The stroke is 14 ft. In casting each of these enormous cylinders 33 tons of metal were poured into the mould, and, now they are finished off, each cylinder weighs about 28 tons, or 62,720 lb.

These engines stand nearly 50 ft. high, and have a nominal force of 1000-horse power, the motive power being generated by the remaining four boilers; they are constructed on the disconnecting principle, in order that they may be used jointly or separately, so that both or either of the paddle-wheels can be put in independent motion.

There are also two auxiliary high-pressure engines, each of 10-horse power. These engines are adapted to receive connections for working pumps, and the necessary machinery for hoisting sails, weighing anchor, and many other laborious tasks usually performed by sailors.

The diameter of the paddle-wheels is 56 ft. (which gives a circumference larger than the circus at Astley's), and each float board is 13 ft. long.

The number of anchors are ten, and the prodigious weight of them, and the 800 fathoms of chain-cable necessary for their service—together 153 tons—is in proportion to the other items.

The vessel will draw 30 ft. of water when laden, 20 ft only when light. The speed of the vessel is estimated by Mr. Brunel at fifteen to twenty knots an hour, without diminution or cessation, under any weather, which would accomplish the voyage between England and Australia, viâ the Cape of Good Hope, in about thirty-three days, and to India in about thirty days; half the time occupied by the fastest clippers afloat.

The arrangements effected for the propulsion of the vessel, besides the aid of steam power, are as follow:—

She will have six masts, the two principal being crossed by yards, as in a line-of-battle ship, the remainder being schooner-rigged; there will be upwards of 6500 square yards of canvas available. A bowsprit is dispensed with; each mast is of hollow wrought iron, except the mizen-mast, which is wood.

The following are the dimensions of this great structure:—

Length over all	692 feet	Length of forecastle	140 feet
Breadth	83 „	Height of ditto	8 „
„ across the paddle-boxes	120 „	Height of saloons on lower deck	13 ft. 8 in.
Depth from deck to keel	58 ft. 6 in.	Number of saloons	5
Number of small transverse bulkheads or water-tight compartments	12	Height of saloons on upper deck	12 feet
Ditto, partial	7	Number of ditto	5
Longitudinal bulkheads running fore and aft at a distance of 36 feet apart for a length of 350 feet	2	Length of upper saloons	60 feet
Width of space between the two skins of ship	2 ft. 10 in.	Ditto lower	60 „
		Thickness of iron plates in keel	1 inch
		Ditto inner and outer skins bulkheads	½ „
		„ iron deck	½ „
		Weight of ditto (about)	130 tons

It only remains to add to the history of the vessel, that after the first attempt to launch her on the 2nd November, 1857, failed, the most strenuous efforts were made to complete the operation: and at length, on the 31st January, 1858, she was got afloat physically and materially, but financially, and for all practical purposes, she was as hard a-fast as ever. In fact, the original company the Eastern Steam Navigation Company—having, with commendable effort struggled through the monetary and commercial panic of the year 1857, found themselves, in May of the year 1858, in the unenviable, not to say disastrous, position of having brought the vessel only into such a condition as that she could float at her moorings off Deptford; of being £90,000 in debt; of having exhausted their power of making calls on the shareholders, while those among them who were inclined to increase their stake in the concern were prevented by legal difficulties from taking any steps towards action, except on terms obviously unjust. In this dilemma the directors, aided by a committee of consultation, devised and made public a plan for raising a sum of £220,000, by means of annuities. It was, however, soon found that the advance of money by way of annuity was not a favourite mode of investment in the English money market; and the proposition met with little or no success, and ultimately the scheme proved a failure. At this time another plan had been proposed, which was favourably received by many influential proprietors in the Eastern Steam Navigation Company, by which a new company was to be formed to take the vessel into their hands on mortgage, and to fit her for sea. This plan was perfectly successful, the required capital was raised, and the vessel placed in the hands of Mr. Scott Russell, who contracted to fit her for sea. Early in the month of August, 1859, the Great Ship had so far advanced towards completion that invitations were sent out to a large number of the aristocracy, the members of the House of Commons, and the friends of the directors to two entertainments, which took place on board, and ample opportunity was afforded for the inspection of the vessel. In the following week she was thrown open to the visits of the public, and thousands of persons availed themselves of the occasion to witness the effect of the completion of the most striking specimen of naval architecture. On the 27th of August all access to the ship was closed; and, on the 3rd of September, she left the river, preparatory to starting on her trial trip. From this point her actual future may be said to date.

In concluding the above *resumé* of the history of the past fortunes, and directing attention to the future prospects, of the Great Eastern ship, it would be difficult to add anything to the able and eloquent manner in which the public journals have addressed their remarks to the subject, and have dealt with a question of such importance to every interest, commercial and social, not only of this country but the world, and of the humanising and harmonising influences which must result from constant intercourse between the inhabitants of the different nations of the world, it would be trite and superfluous now to dilate. It needs no proof, requires no argument; and it only needs that it should be pointed out how vast an agent such a vessel as this must be in the extension of that principle. It is stated, and truly, that it will be in the power of the Great Eastern to throw 10,000 soldiers on any given spot of her Majesty's dominions in a space of time hitherto undreamed of. Be it so—if that stern necessity should arise; but it is far more agreeable to contemplate the idea of her bearing, on every voyage she undertakes, ten thousand heralds of peace, in the shape of the good men and true whose mission it is to carry the blessings of civilisation and the tidings of goodwill by the insensible action of their presence among the less advanced of mankind! We have invaded China in arms. We have, by pacific means, obtained an entrance into the hitherto sealed regions of Japan!—thus opening up new spheres of progress and of duty for Englishmen. Who shall say what effect the shortening of the voyage between Great Britain and those distant lands, by such agency as that of the Great Eastern affords, may not have on those strange and unapproachable people? In the Electric Telegraph much has been done to annihilate time; by such vessels as this, a long step has been made in the way of annihilating space. In another point of view the matter has been well considered by an eloquent writer, who says, while dealing with the real practical result of the grand experiment of the Great Eastern:—

"The Roman poet, Horace, as he surveyed the vast sublunary scene of restless industry and adventure before him, was struck by nothing so much as the triumph of man over the sea. He expresses himself as more than struck—as shocked! He argued that the sea was a providential appointment, and that it was impious in man to struggle against it; he had no right to unite what God had separated, and connect land with land, when the Divine power had inserted water between. We have long seen the weakness of the argument, and arrived at a much better doctrine of final causes than this: but if any one wants to see a grand finishing blow to the Horatian argument, he may see it given by the Great Eastern. That mighty fabric, indeed, will not talk, but it will act—its act being a month's voyage to India or to Australia. That act, while it is a speechless, is, at the same time, the most powerful answer that the religious scruples of the awe-struck poet could receive. A reflecting mind will see in such a voyage a much more natural, proper, wise, and obedient fulfilment of the designs of Providence, than any timid self-confinement and servile deference to a barrier of nature would have been. It will appear that the sea was made to alternate with the dry land, not that continents might be disconnected, but that man should have the opportunity of exerting his skill and invention in connecting them. The result of this great experiment of shipbuilding, if it answer—of which there is little or no doubt—will be a consolidation of the British empire such as we have never yet seen. Half of the distance which separates the various sections of it from the mother country and from each other will be removed. Our colonies will be brought comparatively close to us, and what is almost of as much importance as the actual vicinity gained, they will be more than twice as near to us in imagination. The difference between a month's voyage and two or three months is all the difference to the imagination. We think of a place as within reach, and within a home distance, if it is only 'a month off.' The whole empire is thus brought idto a home compass, and obtains the addition of strength which so much greater union gives. We shall find ourselves paying visits to, and receiving from, India, Australia, and America. Our friends will come over for the summer with return tickets, and the British empire will become, in virtual compass, a province."

It must be a matter of congratulation to the public of this country, that all which has hitherto been dwelt upon in imagination is about to be realised, and that the Great Eastern has become one of the greatest of facts!

FEBRUARY.

LONG LINING IN THE BARROW DEEPS.

Day of Month.	Day of Week.	ANNIVERSARIES, FESTIVALS, REMARKABL EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Morn.	MOON. Souths. Aftern.	MOON. Sets at London. Morn.	Age.	HIGH WATER AT LONDON BRIDGE. Morn.	HIGH WATER AT LONDON BRIDGE. Aftern.	HIGH WATER AT LIVERPOOL DOCK. Morn.	HIGH WATER AT LIVERPOOL DOCK. Aftern.	PLANETS.	Day of M.	Rise.	South.	Set.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.			H. M.	H. M.	H. M.
1	W	New River commenced, 1608	7 42	12 13 49	4 46	10 34	7 7	2 37	10	7 32	7 59	4 37	5 10	Mercury.	1	7 21 M	11 24 M	3 28 A
2	Th	*Purificat.* Candlemas Day	7 40	12 13 57	4 48	11 13	8 4	3 53	11	8 32	9 11	5 49	6 34		6	7 24	11 38	3 53
3	F	*Blaise*	7 39	12 14 4	4 50	Aftern.	9 6	5 2	12	9 56	10 45	7 23	8 9		11	7 26	11 53	4 24
4	S	Great Frost, 1814	7 36	12 14 10	4 52	1 20	10 8	5 58	13	11 31	—	8 47	9 19		16	7 21	0 8 A	4 57
5	☉	SEPTUAGESIMA	7 35	12 14 16	4 54	2 46	11 10	6 42	14	0 9	0 41	9 48	10 14		21	7 20	0 23	5 27
6	M	Day breaks 5h. 37m.	7 34	12 14 20	4 55	4 19	Morn.	7 12	15	1 10	1 36	10 39	11 3		26	7 14	0 38	6 4
7	Tu	Twilight ends 6h. 54m.	7 32	12 14 24	4 57	5 53	0 8	7 35	○	2 1	2 25	11 27	11 51	Venus.	1	8 51	2 13	7 36
8	W		7 31	12 14 27	4 59	7 24	1 3	7 55	17	2 49	3 13	—	0 12		6	8 42	2 16	7 52
9	Th	Roman Republic established, 1849	7 29	12 14 29	5 1	8 52	1 56	8 9	18	3 34	3 55	0 33	0 53		11	8 29	2 18	8 7
10	F	Queen Victoria married, 1840	7 27	12 14 30	5 3	10 20	2 47	8 24	19	4 15	4 37	1 15	1 36		16	8 20	2 21	8 23
11	S	Day breaks 5h. 30m.	7 25	12 14 31	5 5	11 46	3 37	8 40	20	4 58	5 18	1 56	2 16		21	8 9	2 23	8 38
12	☉	SEXAGESIMA S.	7 23	12 14 30	5 7	Morn.	4 29	9 0	21	5 38	5 58	2 36	2 56		26	7 58	2 25	8 53
13	M	Twilight ends 6h. 49m.	7 21	12 14 30	5 8	1 10	5 21	9 24	☾	6 18	6 39	3 17	3 41	Mars.	1	2 53	7 11 M	11 29 M
14	Tu	*St. Valentine*	7 20	12 14 28	5 10	2 30	6 15	9 55	23	7 3	7 28	4 6	4 35		6	2 50	7 4	11 18
15	W		7 18	12 14 25	5 12	3 41	7 10	10 37	24	7 57	8 32	5 10	5 52		11	2 47	6 57	11 6
16	Th	Dr. Kane died, 1857	7 16	12 14 22	5 14	4 39	8 4	11 30	25	9 14	10 0	6 38	7 26		16	2 44	6 50	10 56
17	F	Crimea evacuated, 1857	7 14	12 14 19	5 16	5 24	8 56	Aftern.	26	10 48	11 34	8 12	8 52		21	2 40	6 43	10 46
18	S		7 12	12 14 14	5 17	5 57	9 46	1 44	27	—	0 14	9 26	9 52		26	2 34	6 35	10 35
19	☉	QUINQUAGESIMA	7 10	12 14 9	5 19	6 20	10 33	2 56	28	0 48	1 14	10 14	10 33	Jupiter.	1	2 21 A	10 31 A	6 45
20	M	Camb. Lent Term divides	7 8	12 14 3	5 21	6 39	11 17	4 7	29	1 36	1 55	10 52	11 8		6	1 58	10 9	6 24
21	Tu	Twilight ends 7h. 16m.	7 6	12 13 56	5 23	6 53	11 59	5 18	●	2 14	2 30	11 23	11 39		11	1 35	9 47	6 3
22	W	ASH. WEDNESD.	7 4	12 13 49	5 25	7 5	Aftern.	6 26	1	2 45	3 1	11 54	—		16	1 14	9 26	5 42
23	Th	Day breaks 5h 10m.	7 2	12 13 41	5 27	7 17	1 18	7 35	2	3 16	3 31	0 9	0 22		21	0 53	9 5	5 21
24	F	*St. Matthias*	7 0	12 13 33	5 28	7 28	1 58	8 43	3	3 44	3 57	0 35	0 49		26	0 31	8 44	5 1
25	S		6 58	12 13 24	5 30	7 40	2 39	9 54	4	4 11	4 25	1 3	1 17	Saturn.	1	5 39	1 4 M	8 26
26	☉	QUAD. 1ST S. in L.	6 55	12 13 14	5 32	7 54	3 22	11 7	5	4 39	4 52	1 30	1 45		6	5 15	0 42	8 5
27	M		6 53	12 13 4	5 34	8 13	4 8	Morn.	6	5 7	5 22	2 0	2 15		11	4 53	0 21	7 45
28	Tu	Day breaks 4h. 57m.	6 51	12 12 53	5 36	8 36	4 58	0 22	7	5 37	5 54	2 32	2 50		16	4 31	11 56 A	7 25
29	W	Twilight ends 7h. 20m.	6 49	12 12 42	5 37	9 10	5 53	1 36	☽	6 12	6 34	3 12	3 36		21	4 9	11 34	7 3
															26	3 47	11 13	6 43
														Uranus.	1	11 24 M	7 22	3 24
															6	11 5	7 3	3 5
															11	10 45	6 43	2 45
															16	10 25	6 23	2 25
															21	10 6	6 4	2 6
															26	9 46	5 44	1 46

MR JOHN SCOTT RUSSELL.

MR. JOHN SCOTT RUSSELL, the builder of the *Great Eastern*, was born in the Vale of Clyde, in December, 1808. He was educated at the University of St. Andrew's, where he early distinguished himself by his scholastic attainments, and graduated with honours at the age of sixteen. He took a liking to the study of mechanics, physics, and the higher branches of mathematics, and by diligent application attained a remarkable proficiency. When Sir John Leslie, the distinguished Professor of Natural Philosophy in St. Andrew's University, died, in 1832, Mr. Scott Russell, although very young, was considered the most fitting man for the post, and was accordingly elected. He delivered a series of lectures to the students, many of whom were much older than himself, and performed the duties of his office in a manner to gain the good opinion of those whose approbation was worth striving for, and whose praise was not to be obtained without sterling merit.

Mr. Russell then studied the duties of a practical engineer, and worked for many years in one of the largest engineering firms in Scotland. He came to London in 1844; and, after practising some time as a practical engineer, entered more actively into business as a shipbuilder at Millwall. Bringing his mathematical attainments and general scientific knowledge to bear upon the subject, he began to investigate the laws by which water opposes resistance to floating bodies. He so far improved the form of ships that they now possess the quality of offering the least possible resistance. Mr. Russell's "wave-line" system of construction was brought before the Royal Society of Edinburgh in 1837, and at once earned him the distinction of the large gold medal. He was, moreover, elected Fellow of the society, and was invited to a seat in the Council. The practical introduction of the system brought him still greater distinction. He adopted the wave-line principle in all the ships built under his direction. As a result the rate of speed of vessels across the ocean has wonderfully advanced. The application of the same principle to sailing-ships, under the name of "clipper-built," has been attended with equal success. Mr. Russell was elected Fellow of the Royal Society of London in 1847. He was also appointed member of the Institute of Civil Engineers and a member of the Society of Arts.

Mr. Russell is not only the builder of the *Great Eastern* but was the active projector of the undertaking, and, to use his own words, to him "belongs the responsibility of her merits or defects as a piece of naval architecture."

MR. JOHN SCOTT RUSSELL.—FROM "THE ILLUSTRATED LONDON NEWS."

DANGERS OF SMOKING.—M. F. Bouisson, Professor of Medicine at Montpellier, has published in the *Gazette Médicale* of Paris a memoir on the cancer of the mouth prevailing among smokers of tobacco. In his ordinary and hospital practice in the interval of a few years he has collected sixty-eight very clear and exact cases (of persons varying from twenty to eighty years of age) which leave no doubt as to the sad power which tobacco possesses of producing cancer of the mouth. These observations do not express a simple coincidence of the malady with a provoking cause, but establish a true correlation in this sense, that among the persons attacked with cancer the habit of smoking was either carried to excess, or accompanied with significative circumstances, such as the use of a short pipe, the decay of the teeth, and other evidences of a neglect of the hygiene of the mouth. The ordinary form of this cancer is epithelioma, or epidermic cancer. Of the sixty-eight cases above mentioned forty-three were effected in the lower lip; five in the upper lip; seven in the tongue; others in the palate cheek, &c. In eighteen cases the brain became seriously affected.—*Cosmos.*

BRITISH INSECTS AND BUTTERFLIES.

JANUARY AND FEBRUARY.

KEEN are the winds, dark are the drifted clouds, and storms and sleet "deform the day delightless;" yet now and then the sunbeams break forth, as if in mockery, and lure the Pipistrelle Bat from its winter retreat. An hour or two in mid-day suffices for its exercise, and soon the spreading clouds warn it to retire. But not for nothing is it that it has been temporarily called into activity. The same transient gleam that roused its slumbering energies has revived hosts of gnats and suchlike insects, hybernating creatures, which issue forth from many a little nook and cranny to dance for a brief space in tepid air, and again retire. Not unmolested, however, are they in their mazy revels. The bat snaps them up and thins the phalanx.

When we speak of the torpidity of insects we do not forget that numbers of these creatures, when they have attained their perfect state, perish under the chilling blasts of the declining year; nay, the existence of many (as the *Ephemeræ*) terminates in the course of a few sunny hours; they deposit their eggs, and their work is done. Nevertheless, numerous species, in one condition or another, positively hybernate (of course it is to British insects that we expressly allude); and if, by a few general observations we can excite some degree of interest, our object will be gained.

Insects pass the winter in various stages of existence. First in the egg-stage. Here we think the term hybernation to be scarcely admissible; the eggs are merely in a state of quiescence, as those of a fowl before the vital principle is excited by warmth into activity. Nevertheless they endure the temperature without losing vitality, as those of the fowl would assuredly do, but this simple power of endurance cannot be called hybernation, by which term we understand the life-preserving torpor of a living and active animal. They remind us of the buds upon the tree, which develope in due season under the influence of light, air, and warmth. Nor, we may add, does it appear that the number of insects which in this primary egg-state pass through the ordeal of winter is, proportionally, very considerable; at the same time it must be confessed that more extended and accurate researches might add greatly to the catalogue.

Several insects bury their winter-enduring eggs in the earth at a considerable depth, by means of a long and strong ovipositor; we may instance the grasshoppers as the great spotted grasshopper of Europe (*Tettigonia vel acrida verrucivora*), the green grasshoppor (*Tettigonia vel acrida viridissima*); as do also the crane-flies, or harry long-legs (*Tipula*), so common in our meadows.

The aphis tribe next demands a brief notice. The aphis, of which we have many species—pests of the garden—produces living young during the spring and summer, but as summer declines it deposits eggs innumerable, which sustain without injury the severest cold of winter, but early in the spring these eggs disclose their living hosts, which swarm upon the tender shoots of the rose, and upon the sappy bark of the apple-tree, before even the buds are developed. So sudden oftentimes in early spring is the appearance of these noxious insects as to induce a general belief that they or their eggs are floated in the easterly wind, and thrown upon the plants, and shrubs, and trees of the garden and orchard. They may well be called the blight, and upon this term we need not comment.

That the eggs of many coleopterous insects, and certain aquatic species, survive the winter and become hatched in spring is almost beyond a doubt; but more delicate and frail insects than these deposit eggs which the cold season does not destroy. Most persons, perhaps, have noticed a ring round the twig of the hawthorn, the apple, and other trees, closely fitting, and composed of hundreds of small hard-shelled eggs, regularly disposed in circular rows, and glued together in compact order, so as to present a very pleasing appearance. These are the eggs of the lackey-moth (*Clisiocampa neustria*). In spring the tiny caterpillars come forth, and feed upon the leaves of the tree to the twig of which they were attached, instinct having directed the parent in her selection.

Another species of moth (*Hypogymna dispar*) glues an oval disc of eggs to the bark of a small stem or branch, but as these have only a slight shell the female covers them with a blanket, a non-conducting fabric, composed of hairs plucked from her own body, and impervious to wet. In like manner the rabbit makes a nest of its own fur for its young, and the eider duck of its down.

But we must pass to our second subject—insects in their larvæ, grub, or caterpillar state. Numerous are the insects which hybernate in this condition of existence,—some in water, as the fierce dragon-flies, the trout-attractive *Ephemeræ* (May flies) and the *Phryganeæ*. The latter, by means of a silky secretion, form for themselves a sort of sheath, to which is attached a coating, generally rough, sometimes merely granular, consisting of bits of wood, small pebbles, sand, and particles of the shells of water-snails. Protruding the fore part of their body from this singular case, they crawl about, looking like inanimate rough little nothings, self-endowed with the power of locomotion. Well does the angler know the value of the caddis worm (for such is the popular name of these larvæ) as a bait. The caddis-worm is more active on the sandy bed of the water than might be supposed. It is very voracious, and carnivorous in its appetite, devouring both dead and living prey.

Among the coleopterous insects which hybernate in the grub or larvæ state we may notice by way of example the dorbeetle (*Scarabæus stercorarius*, Linn). The grub passes the winter in a deep burrow. On its emergence from the egg this grub feeds on the store of cow-dung prepared for it by the parent. As the cold comes on (after several times changing its skin) it sinks into torpidity, and then assumes the pupa form, the perfect beetle appearing in May or June.

The chafer-beetle (*Melolontha vulgaris*) affords us another example. The female, at the latter end of summer, burrows in the earth to the depth of five or six inches. In this pit she deposits her eggs. From these eggs proceed those destructive larvæ which are the pest of the farmer, and offer to the rook, the farmer's true friend, a coveted *morceau*. In winter these grubs bury themselves still deeper, eating nothing; but woe to the rising wheat in spring. In this predatory state the grub continues till the fourth year, when it becomes a pupa; and in summer myriads of perfect insects make their appearance, the prey of the bat and the fern-owl, or *Caprimulgus*. Who does not know the wireworm—that is, if he ever cultivated a garden. The wireworm is the larva of the *elater*, or springing-beetle, also called click-beetle, which leaps up when placed upon its back. The larva of one species (*Elater segetis*), which feeds on the roots of corn, and often, in conjunction with that of the chafer-beetle, lays waste whole fields, continues for four or five years before becoming transmuted into the perfect insect.

We may here notice the mealworm, the larva of a species of beetle (*Tenebrio molitor*), invaluable to those who keep soft-billed warblers in an aviary, but not advantageous to the miller. It exists in its larva condition for two years. Among the extensive tribe of moths (lepidopterous insects), there is one, namely the goat-moth (*Cossus ligniperda*), the large, wood-boring caterpiliar of which here demands attention. It is in the soft and semi-decayed wood of pollard willows, oaks, and poplars that this caterpillar makes its extensive mines, or irregular tunnels, gnawing its way, and feeding upon and digesting the ligneous particles, the rejectamenta of which thickly cover the floor. Voracious during the spring and summer, it becomes less so towards the close of the season, and, in anticipation of the approaching cold weather, begins to excavate for itself a snug cell, in which to sleep during the winter. But, more than this, attentive to its comforts, it lines the cell with a singular tissue composed of the comminuted particles of the wood, which has been operated upon by its powerful jaws, compacted together by means of a strong tenacious silk, which, like so many other caterpillars, it is capable of secreting in abundance. The fabric thus woven, or felted, is as thick as moderately stout broadcloth, and, being of course a nonconductor, is as efficient as a railway wrapper. In the cell thus prepared the caterpillar passes the winter, not stretched out at length, but in a doubled-up attitude, and so sleeps, taking no nutriment.

Thus, sleeping in winter, and mining and feeding in summer, the caterpillar of the goat-moth enjoys a three years' length of epicurean existence. But the spring time of its change comes; it prepares a cell, lined in the manner described, enters and becomes a pupa or chrysalis. Four or five weeks pass, and then the perfect goat-moth issues forth to enjoy a few bright months of existence, deposit its eggs, and pass away.

But we must not linger. The pupa or chrysalis stage demands attention.

Thirdly, then, the pupa.—In this condition of existence so many insects pass the winter that their name is legion. Butterflies and moths (*Lepidoptera*), bees and certain wasps (*Hymenoptera*), numerous beetles (*Coleoptera*), as the chafer-beetles, the click-beetles (*Elater*), &c., to say nothing of aquatic species, pass the winter in a pupa state. Some suspend themselves against palings or under the coping of old walls; others lodge in the chinks and crannies of wood, bark, and masonry; some find a retreat under moss, or in manure-beds, or under stones. The larva of the *Hepialus humuli* (or ghost-moth) excavates, under a stone, a cavity well fitted to its size and lined with silk, in which it assumes the pupa state, and thus protected endures the cold of winter. The gold swift (*Hepiolus hectus*), the caterpillar of which is an underground feeder, assumes the pupa state under the roots of the heath. Other examples of a like mode of passing the winter underground in the pupa state might be added. For example, the caterpillars of many hawk-moths (*Sphinx*) descend to a considerable distance in the earth, where they excavate an oval cell, in which to assume the pupa state, the perfect insect emerging in summer. Many moths (we allude to the caterpillars) spin cocoons, often of very fine and close texture, in which the pupa remains quiescent until the final transformation is accomplished. The cocoon of the silkworm is a familiar example in point. Some weave their cocoons between withered and crumpled leaves; others roll up the leaves so as to form an envelope, as does the green silver-line moth (*Hylophila prasinana*), while others again seek a shelter in the fissures of bark, amidst matted herbage and brushwood. The female (almost wingless) of the mottled amber-moth deposits her multitudinous eggs on the twigs or branches of trees—the pear, the apple, &c. Here the caterpillars assume the pupa state, and the perfect insect emerges late in autumn. Hordes of the caterpillars of this moth often devastate whole orchards, the pear-trees especially, presenting mournful evidences of their destructiveness, for the eggs deposited in autumn are hatched in spring, and the trees then swarm with them.

Were we to extend our observations upon the hybernating pupæ of beetles, moths, butterflies, &c., pages would not suffice, but we are not called upon to exhaust the subject.

Fourthly. The hybernation of perfect insects.—Here, again, an extensive field opens before us. Beetles innumerable hybernate, some under stones, some under the bark of aged trees, some under moss, and some in pits bored deeply into the earth. It is in a deep burrow that the dorbeetle ensconses itself, and, if we may trust to our personal observations, the beautiful golden-green rose-beetle, which, as we can testify, burrows like a tortoise. Water beetles, as the *Dytiscus** and *Hydrophilus*, plunge into the oozy mud at the bottom of ponds, and drainage courses, and there await the return of summer; this is also the habit of the water-boatman, *Notonecta*, and the water-scorpion, *Nepa* (*Hemiptera*).

Of bees and wasps we forbear here to speak, as they will more appropriately come under our notice in subsequent papers.

We have already said that certain species of aphis, as *Aphis Rosæ*, *Cardui*, &c., hybernate both in the egg and perfect state. We may add that they congregate or cluster together in millions; some, as the apple-aphis, under a delicate cotton-like exudation.

That ants form a compact phalanx in their dormitories is known to all; and it would appear that the hosts of gnats which dance for an hour in the sun, crowd together in their places of retirement. Such is the case with other dipterous insects. There are some beetles which are found collected in numbers together in their hybernacula, as a species of *Carabus*, and also the lady-bird (*Coccinella*). It may be, however, that the same place of refuge which proves attractive to one proves the same to others, and that thus they congregate without special design to do so.

Many of our butterflies, and certain of our moths, present us with an early and late brood. Of the late brood, as far at least as some species are concerned, individuals sheltered in some hospitable asylum survive the winter, and make their appearance unlooked for, but welcome harbingers of spring, even in February and March, should a gleam of warm sunshine awaken their dormant energies. Of these we may mention the brimstone butterfly (*Gonepteryx rhamni*), the painted lady (*Cynthia cardui*), and also the peacock's-eye (*Vanessa io*). Two of these butterflies, the brimstone and the painted lady, figure in our Plate. May it be the lot of those who wander down sheltered country lanes and by snug copses, towards the close of February, to be refreshed with a vision of these attractive courtiers of the sun, in some happy interval between the showers, when bright rays pierce the clouds, and a passing smile irradiates the sombre face of nature.

Our Plate represents the larva of the goat-moth exposed in its retreat by the woodman's axe; a few early lady-birds, the sulphur butterfly, the painted lady, a cloud of gnats; an ants'-nest broken open by the spade, and the chrysalis of the cabbage butterfly.

* This name is etymologically improper; it ought to be Dyticus, as M. Geoffroy writes it.

THE CALENDAR.

PRINCIPAL ARTICLES OF THE CALENDAR FOR THE YEAR OF OUR LORD 1860.

	Gregorian, or New Calendar.	Julian, or Old Calendar.
Golden Number	18	18
Epact	VII	XVIII
Solar Cycle	21	21
Roman Indiction	3	3
Dominical Letter	A G	C B
Septuagesima	Feb. 5	Jan. 31
Ash Wednesday	Feb. 22	Feb. 17
Easter Sunday	April 8	April 3
Ascension Day	May 17	May 12
Pentecost—Whit Sunday	May 27	May 22
1st Sunday in Advent	Dec. 2	Nov. 27.

The year 1860 is the latter part of the 5620th and the beginning of the 5621th year since the creation of the world, according to the Jews. The year 5621 begins on Sept. 17, 1860.

The year 1860 answers to the 6573rd year of the Julian Period, to the 2613th year from the foundation of Rome, to the 2636th year of the Olympiads, and to the 2607th year since the Era of Nabonassar. It answers to the year 7368-9 of the Byzantine Era.

The year 1277 of the Mohammedan Era commences on July 20, 1860, and Ramadân (month of abstinence observed by the Turks) commences on March 23, 1860.

CALENDAR OF THE JEWS FOR THE YEAR 1860.

5620.	1859.	NEW MOONS AND FEASTS.
Tebeth 1	December 27	
„ 10	1860. January 5	Fast: Siege of Jerusalem
Schebat 1	February 5	
Adar 1	„ 24	
„ 13	March 7	Fast: Esther
„ 14	„ 8	Purim
„ 15	„ 9	Schuschan Purim
Nisan 1	„ 24	
„ 15	April 7	Passover begins*
„ 16	„ 8	Second Feast*
„ 21	„ 13	Seventh Feast*
„ 22	„ 14	End of Passover*
Ijar 1	„ 23	
„ 18	May 10	Lag Bo'mer
Sivan 1	„ 22	
„ 6	„ 27	Feast of Weeks*
„ 7	„ 28	Second Feast*
Thamuz 1	June 21	
„ 18	July 8	Fast: Seizure of the Temple
Ab 1	„ 20	
„ 10	„ 29	Fast: Burning of the Temple*
Elul 1	August 19	
5621.		
Tischri 1	Septemb. 17	New Year's Feast*
„ 2	„ 18	Second Feast*
„ 3	„ 19	Fast: Death of Gedaliah
„ 10	„ 26	Fast: Day of Atonement*
„ 15	October 1	Feast of the Tabernacles*
„ 16	„ 2	Second Feast*
„ 21	„ 7	Feast of Palms
„ 22	„ 8	End of Feast of Tabernacles*
„ 23	„ 9	Feast of the Law*
Marshes. 1	„ 17	
Kislev 1	Novemb. 15	
„ 25	Decemb. 9	Feast of the Dedication of the Temple
Tebeth 1	„ 14	
„ 10	„ 23	Fast: Siege of Jerusalem
	1861.	
Schebat 1	January 12	

Those marked with an asterisk are strictly observed.

BEGINNING OF THE SEASONS, 1860.

			D.	H.	M.	
Sun enters Capricornus and	Winter begins	1859, Dec.	22	8	3	A.M.
„ „ Aries	Spring begins	1860, Mar.	23	9	5	A.M.
„ „ Cancer	Summer begins	„ June	21	5	43	A.M.
„ „ Libra	Autumn begins	„ Sept.	22	7	52	P.M.
„ „ Capricornus	Winter begins	„ Dec.	21	1	51	P.M.

The Sun will consequently be in the	Winter signs	89	1 2
„ „ „ „	Spring signs	92	20 38
„ „ „ „	Summer signs	93	14 9
„ „ „ „	Autumn signs	89	17 59

The Summer is therefore 4 days 13 hours and 7 minutes longer than the Winter; 3 days 20 hours and 10 minutes longer than the Autumn; and 17 hours and 31 minutes longer than the Spring.

	1860.	D.	H.	M.		°	′	″
The Sun will be on the Equator and going North	Mar.	20	9	5	A.M., his declin. being	0	0	0
The Sun will reach his greatest North declination	June	21	5	43	A.M., his declin. being	23	27	34
The Sun will be on the Equator and going South	Sept.	22	7	52	P.M., his declin. being	0	0	0
The Sun will reach his greatest South declination	Dec.	21	1	51	P.M., his declin. being	23	27	33

The Sun will be North of the Equator (comprising the periods of Spring and Summer) 186 days 10 hours 47 minutes.

The Sun will be South of the Equator (comprising the periods of Autumn and Winter) 178 days 19 hours 1 minute.

MOHAMMEDAN CALENDAR FOR THE YEAR 1860.

Year.	Name of the Months.	Month begins.
1276.	Dschemadî el-accher I.	December 26, 1859
„	Redscheb I.	January 24, 1860
„	Schabân I.	February 23, „
„	Ramadân I.	March 23, „
„	Schewwâl I.	April 22, „
„	Dsû'l-kade I.	May 21, „
„	Dsû'l-hedsche I.	June 20, „
1277.	Moharrem I.	July 20, „
„	Safar I.	August 19, „
„	Rebi el-awwel I.	September 17, „
„	Rebi el-accher I.	October 17, „
„	Dschemadî el-awwel I.	November 15, „
„	Dschemadî el-accher I.	December 15, „
„	Redscheb I.	January 13, 1861

LAW TERMS.

As settled by Statutes 11 Geo. IV., and 1 Will. IV., cap. 70, s. 6 (passed July 23, 1830); 1 Will. IV., cap. 3, s. 2 (passed December 23, 1830).

Hilary Term	Begins	January	11	Ends January	31
Easter Term	„	April	15	„ May	8
Trinity Term	„	May	22	„ June	12
Michaelmas Term	„	November	2	„ November	26

UNIVERSITY TERMS, 1860.

OXFORD.

TERM.	BEGINS.	ENDS.
Lent	January 14	March 31
Easter	April 8	May 26
Trinity	May 30	July 7
Michaelmas	October 10	December 17
	The Act, July 3.	

CAMBRIDGE.

TERM.	BEGINS.	DIVIDES.	ENDS.
Lent	Jan. 13	Feb. 20, Noon	March 30
Easter	April 18	May 27, Midnight	July 6
Michaelmas	Oct. 10	Nov. 12, Midnight	Dec. 16
	The Commencement, July 3.		

ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

☉ The Sun	22 Calliope	52 Europa
● New Moon	23 Thalia	53 Calypso
☽ First Quart. of Moon	24 Themis	54 Alexandra
○ Full Moon	25 Phocea	55 Pandora
☾ Last Quart. of Moon	26 Proserpine	56 —
☿ Mercury	27 Euterpe	♃ Jupiter
♀ Venus	28 Bellona	♄ Saturn
⊕ or ♁ The Earth	29 Amphitrite	♅ Uranus
♂ Mars	30 Urania	♆ Neptune
⚳ Ceres	31 Euphrosyne	☊ Ascending Node
⚴ Pallas	32 Pomona	☋ Descending Node
⚵ Juno	33 Polyhymnia	N North
⚶ Vesta	34 Circe	E East
5 Astrea	35 Leucothea	S South
6 Hebe	36 Fides	W West
7 Iris	37 Atalanta	° Degrees
8 Flora	38 Leda	′ Minutes of Arc
9 Metis	39 Lætitia	″ Seconds of Arc
10 Hygeia	40 Harmonia	D Days
11 Parthenope	41 Daphne	H Hours
12 Victoria	42 Isis	M Minutes of Time
13 Egeria	43 Ariadne	S Seconds „
14 Irene	44 Nisa	☉ Sunday
15 Eunomia	45 Eugenia	☽ Monday
16 Psyche	46 Hestia	♂ Tuesday
17 Thetis	47 Aglaia	☿ Wednesday
18 Melpomene	48 Doris	♃ Thursday
19 Fortuna	49 Pales	♀ Friday
20 Massilia	50 Virginia	♄ Saturday
21 Lutetia	51 Nemausa	

The Symbol ☌ Conjunction, or having the same Longitude or Right Ascen.
„ □ Quadrature, or differing 90° in Longitude or Right Ascen.
„ ☍ Opposition, or differing 180° in Longitude or Right Ascen.

(For explanation of Astronomical Terms, see Almanack for the year 1848.)

FIXED AND MOVABLE FESTIVALS, ANNIVERSARIES, &c.

Epiphany	Jan.	6	Birth of Queen Victoria	May	24
Septuagesima Sunday	Feb.	5	*Pentecost—Whit Sunday*	„	27
Quinquagesima—Shrove S.	„	19	*Trinity Sunday*	June	3
Ash Wednesday	„	22	*Corpus Christi*	„	7
Quadragesima—1st Sunday in Lent	„	26	Accession of Queen Vict.	„	20
St. David	Mar.	1	Proclamation	„	21
St. Patrick	„	17	St. John Baptist—Midsummer Day	„	2
Annunciation—Lady Day	„	25	Birth of Prince Albert	Aug.	26
Palm Sunday	April	1	St. Michael—Michaelmas Day	Sept.	29
Good Friday	„	6	Birth of Prince of Wales	„	9
EASTER SUNDAY	„	8	St. Andrew	„	30
Low Sunday	„	15	*1st Sunday in Advent*	Dec.	2
St. George	„	23	St. Thomas	„	21
Rogation Sunday	May	13	CHRISTMAS DAY	„	25
Ascension Day—Holy Th.	„	17			

MARCH

PLOUGHING.

Day of Month	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Morn.	MOON. Souths Aftern.	MOON. Sets at London. Morn.	Age.	HIGH WATER AT LONDON BRIDGE. Morn.	LONDON BRIDGE. Aftern.	LIVERPOOL DOCK. Morn.	LIVERPOOL DOCK. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	Th	*St. David*	6 47	12 12 30	5 39	9 54	6 51	2 46	9	6 58	7 24	4 2	4 34
2	F	*St. Chad*	6 45	12 12 17	5 41	10 58	7 51	3 46	10	7 56	8 37	5 15	6 4
3	S	Wesley died, 1791	6 43	12 12 4	5 43	Aftern.	8 51	4 34	11	9 26	10 17	6 55	7 43
4	☉	2ND S. in LENT	6 40	12 11 51	5 44	1 42	9 49	5 9	12	11 5	11 50	8 28	9 5
5	M	Day breaks 4h. 45m.	6 38	12 11 37	5 46	3 13	10 45	5 35	13	—	0 27	9 34	9 59
6	Tu	Twilight ends 7h. 40m.	6 35	12 11 22	5 48	4 45	11 39	5 55	14	0 56	1 21	10 22	10 44
7	W	*Perpetua*	6 34	12 11 8	5 50	6 17	Morn.	6 12	○	1 44	2 6	11 6	11 27
8	Th	William III. died, 1702	6 31	12 10 53	5 51	7 47	0 31	6 28	16	2 28	2 49	11 48	—
9	F	Dr. Clarke died, 1822	6 29	12 10 37	5 53	9 16	1 23	6 44	17	3 10	3 30	0 8	0 28
10	S	Day breaks 4h. 34m.	6 27	12 10 22	5 55	10 44	2 16	7 3	18	3 50	4 9	0 47	1 8
11	☉	3RD S. in LENT.	6 25	12 10 5	5 56	Morn.	3 10	7 25	19	4 30	4 50	1 28	1 48
12	M	*St. Gregory*	6 23	12 9 49	5 58	0 9	4 5	7 54	20	5 10	5 30	2 8	2 28
13	Tu	Twilight ends 7h. 55m.	6 20	12 9 32	6 0	1 27	5 2	8 33	21	5 50	6 11	2 49	3 12
14	W	Reform Bill passed, 1832	6 18	12 9 15	6 1	2 32	5 57	9 24	☾	6 34	7 0	3 38	4 7
15	Th	London Bridge com., 1824	6 16	12 8 58	6 3	3 21	6 51	10 25	23	7 29	8 3	4 41	5 25
16	F	Gustavus III. assassin., 1792	6 14	12 8 41	6 5	3 59	7 43	11 33	24	8 47	9 34	6 12	6 58
17	S	*St. Patrick*	6 11	12 8 23	6 7	4 25	8 30	Aftern.	25	10 20	11 5	7 43	8 24
18	☉	4TH S. in LENT.	6 9	12 8 6	6 8	4 46	9 15	1 56	26	11 46	—	8 58	9 24
19	M	Capture of Lucknow, 1858	6 7	12 7 48	6 10	5 1	9 57	3 7	27	0 20	0 46	9 45	10 5
20	Tu	Day breaks 4h. 10m.	6 4	12 7 30	6 11	5 14	10 38	4 16	28	1 7	1 27	10 24	10 40
21	W	*Benedict*	6 2	12 7 12	6 13	5 26	11 18	5 24	29	1 46	2 2	10 55	11 8
22	Th	Twilight ends 8h. 11m.	6 0	12 6 53	6 15	5 38	11 57	6 33	●	2 17	2 30	11 21	11 35
23	F	Emperor Paul died, 1803	5 58	12 6 35	6 17	5 50	Aftern.	7 44	1	2 43	2 57	11 49	—
24	S	Overseers appointed	5 56	12 6 17	6 18	6 3	1 21	8 56	2	3 11	3 26	0 4	0 19
25	☉	5TH S. IN LENT.	5 53	12 5 58	6 20	6 20	2 6	10 11	3	3 41	3 55	0 33	0 47
26	M	[Annunc. Lady Day Mohammerah captured, 1857	5 51	12 5 40	6 22	6 42	2 55	11 25	4	4 9	4 24	1 2	1 17
27	Tu	Day breaks 3h. 49m.	5 48	12 5 21	6 23	7 12	3 48	Morn.	5	4 39	4 55	1 33	1 51
28	W	Chelsea Bridge opened, 1858	5 46	12 5 3	6 25	7 53	4 44	0 36	6	5 13	5 32	2 10	2 30
29	Th	Inst. of French Legislative Chambers, 1852	5 44	12 4 45	6 27	8 47	5 41	1 37	7	5 52	6 14	2 52	3 17
30	F	Cambridge Lent Terms ends	5 42	12 4 26	6 29	9 57	6 39	2 29	☽	6 39	7 9	3 47	4 21
31	S	Oxford Lent Term ends	5 40	12 4 8	6 30	11 18	7 36	3 6	9	7 43	8 25	5 3	5 52

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	7 7 M	0 49 A	6 33 A
	6	6 58	1 3	7 10
	11	6 46	1 11	7 38
	16	6 29	1 13	7 58
	21	6 12	1 4	7 58
	26	5 49	0 44	7 39
Venus.	1	7 50	2 27	9 6
	6	7 38	2 29	9 21
	11	7 27	2 31	9 35
	16	7 17	2 34	9 53
	21	7 7	2 37	10 8
	26	6 59	2 40	10 23
Mars.	1	2 32	6 30 M	10 28 M
	6	2 25	6 22	10 19
	11	2 20	6 15	10 10
	16	2 13	6 7	10 0
	21	2 8	6 0	9 52
	26	2 1	5 52	9 43
Jupiter.	1	0 14 A	8 27 A	4 44
	6	11 45 M	8 7	4 24
	11	11 35	7 48	4 4
	16	11 15	7 28	3 45
	21	10 56	7 9	3 26
	26	10 37	6 50	3 7
Saturn.	1	3 29	10 56	6 27
	6	3 7	10 35	6 7
	11	2 46	10 14	5 46
	16	2 25	9 54	5 27
	21	2 4	9 33	5 6
	26	1 42	9 12	4 46
Uranus.	1	9 30	5 29	1 32
	6	9 11	5 10	1 13
	11	8 51	4 50	0 53
	16	8 32	4 31	0 34
	21	8 13	4 12	0 15
	26	7 54	3 53	11 52 A

"THE COTTAGE DOOR." PAINTED BY J. JENKINS.—FROM "THE ILLUSTRATED LONDON NEWS."

THE QUEEN AND ROYAL FAMILY.

THE QUEEN.—VICTORIA, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, was born at Kensington Palace, May 24, 1819; succeeded to the throne June 20, 1837, on the death of her uncle, King William IV.; was crowned June 28, 1838; and married, February 10, 1840, to his Royal Highness Prince Albert. Her Majesty is the only child of his late Royal Highness Edward Duke of Kent, son of King George III.

His Royal Highness Francis-Albert-Augustus-Charles-Emanuel-Buisici, PRINCE CONSORT, DUKE OF SAXE, PRINCE OF COBURG AND GOTHA, K.G., born August 26, 1819.

The children of her Majesty are:—

Her Royal Highness Victoria-Adelaide-Mary-Louisa, PRINCESS ROYAL, born November 21, 1840, and married to his Royal Highness Prince Frederick William of Prussia, January 25, 1858.

His Royal Highness Albert-Edward, PRINCE OF WALES, born November 9, 1841.

Her Royal Highness Alice Maud-Mary, born April 25, 1843.

His Royal Highness Alfred-Ernest Albert, born August 6, 1844.

Her Royal Highness Helena-Augusta-Victoria, born May 25, 1846.

Her Royal Highness Louisa-Carolina-Alberta, born March 18, 1848.

His Royal Highness Arthur-William-Patrick-Albert, born May 1, 1850.

His Royal Highness Leopold-George-Duncan-Albert, born April 7, 1853.

Her Royal Highness Beatrice-Mary-Victoria-Feodore, born April 14, 1857.

George-Frederick-William Charles, K.G., DUKE OF CAMBRIDGE, cousin to her Majesty, born March 26, 1819.

Victoria-Mary-Louisa, DUCHESS OF KENT, her Majesty's mother, born August 17, 1786; married, in 1818, to the Duke of Kent, who died January 23, 1820.

Augusta-Wilhelmina-Louisa, DUCHESS OF CAMBRIDGE, niece of the Landgrave of Hesse, born July 25, 1795; married, in 1818, the late Duke of Cambridge, by whom she has issue George-William, Augusta-Caroline, and Mary-Adelaide.

George-Frederick-Alexander-Charles-Ernest-Augustus, K.G., KING OF HANOVER, cousin to her Majesty, born May 27, 1819; married, February, 1843, Princess Mary of Saxe-Altenburg, and has a son.

Augusta-Caroline-Charlotte-Elizabeth-Mary-Sophia-Louisa, daughter of the late Duke of Cambridge, and cousin to her Majesty, born July 19, 1822; married, June 28, 1843, Frederick, Hereditary Grand Duke of Mecklenburg-Strelitz.

Mary-Adelaide-Wilhelmina-Elizabeth, daughter of the late Duke of Cambridge, and cousin to her Majesty, born November 27, 1833.

HER MAJESTY'S HOUSEHOLD.

Lord Chamberlain	Viscount Sydney.
Vice-Chamberlain	Viscount Castlerosse.
Lord Steward	Earl of St. Germans.
Treasurer of the Household	Viscount Bury.
Comptroller of the Household	Lord Proby.
Master of the Household	Lieutenant-Colonel Biddulph.
Secretary of Board of Green Cloth	E. M. Browell, Esq.
Keeper of the Privy Purse	Colonel Sir C. Phipps.
Secretary	H. T. Harrison, Esq.
Mistress of the Robes	Duchess of Sutherland.
Master of the Horse	Marquis of Ailesbury.
Clerk Marshal	Lord A. Paget.
Master of the Buckhounds	Earl of Bessborough.

PRINCE CONSORT'S HOUSEHOLD.

Groom of the Stole	Earl Spencer.
Treasurer	Colonel Sir C. Phipps.
Private Secretary	Major-General Hon. C. Grey.
Clerk Marshal	Colonel Hon. A. N. Hood.

PRINCE OF WALES'S HOUSEHOLD.

Treasurer and Cofferer	Colonel Sir C. Phipps.
Keeper of the Privy Seal	Sir W. Dunbar, Bart.
Secretary and Clerk of Council	J. R. Gardiner, Esq.
Attorney-General	W. J. Alexander, Esq.

BRITISH AND FOREIGN AMBASSADORS.

	British Ambassadors, &c., Abroad.	Foreign Ambassadors in England.
America	Lord Lyons	Hon. George M. Dallas
Austria	Lord Augustus Loftus	Count d'Apponyi
Bavaria	Sir J. R. Milbanke, Bart.	Baron de Cetto
Belgium	Lord Howard deWalden, G.C.B.	M. van de Weyer
Brazil	Hon. F. R. Forbes	Com. de C. Moreira
Buenos Ayres	W. D. Christie, Esq.	Don J. B. Alberde
Denmark	A. B. Paget, Esq.	Admiral van Dockum
France	Earl Cowley, G.C.B.	Count de Persigny
German Conf.	Sir Alexander Malet, Bart.	J. G. Behrends, Esq. (Cons.)
Greece	Rt. Hon. Sir Thos Wyse, K.C.B.	M. Tricoupi
Hanover	G. J. R. Gordon, Esq.	Count Kielmansegge
Hanse Towns	Colonel G. L. Hodges, C.B.	M. Rucker
Mexico	Loftus C. Otway, Esq., C.B.	General J. M. Almonte
Netherlands	Lord Napier	Baron Bentinck
Persia	Sir H. C. Rawlinson	
Portugal	Hon. F. Howard	Count de Lavradio
Prussia	Lord Bloomfield, G.C.B.	Count Bernstorff
Russia	Sir J. F. Crompton, Bt., K.C.B.	Baron de Brunnow
Sardinia	Sir James Hudson, K.C.B.	Marquis d'Azeglio
Saxony	Hon. C. A. Murray	Count Vitzthum d'Eckstädt
Spain	Andrew Buchanan, Esq., C.B.	Senor Don Xavier Isturiz
Swedon	Sir A. C. Magenis	Count Platen
Switzerland	Capt. Hon. E. A. J. Harris	J. Rapp, Esq. (Cons.-Gen.)
Turkey	Sir H. Lytton Bulwer, G.C.B.	M. Musurus
Tuscany	Hon. P. C. Searlett, C B.	Marquis Tonary de Nerli
Wurtemberg	Hon. G. S. S. Jerningham	B. Hebeler, Esq. (Cons.-Gen.)

HER MAJESTY'S CHIEF OFFICERS OF STATE.

First Lord of the Treasury	Viscount Palmerston.
Lord High Chancellor	Lord Campbell.
Chancellor of the Exchequer	Right Hon. W. E. Gladstone.
Lord President of the Council	Earl Granville, K.G.
Lord Privy Seal	Duke of Argyll.
Secretaries of State: Home Department	Right Hon. Sir G. C. Lewis.
Secretaries of State: Foreign Affairs	Lord John Russell.
Secretaries of State: Colonies	Duke of Newcastle.
Secretaries of State: War	Right Hon. S. Herbert.
Secretaries of State: India	Right Hon Sir C. Wood.
First Lord of the Admiralty	Duke of Somerset.
President of the Board of Trade	Right Hon. T. M. Gibson.

(The above form the Cabinet.)

SCOTLAND.	IRELAND.
Lord High Constable, Earl of Erroll.	Lord Lieutenant, Earl of Carlisle.
Keeper of Great Seal, Earl of Selkirk.	Chief Secretary, Rt. Hn. E. Cardwell.
Lord Privy Seal, Lord Panmure, K.T.	Under Secretary, Sir T. Larcom, C.B.
Mas. Household. Duke of Argyll, K.T.	Chief Clerk, R. N. Matheson, Esq.
Ld. High Commis., Earl of Mansfield.	Private Sec., J. Hatchell, jun., Esq.
Lord Clerk Register, Marquis of Dalhousie, K.T.	Lord Chancellor, Rt. Hon. M. Brady.
	Secretary, Mr. Perrin Smith.
Ld. Justice Gen., Rt. Hn. D. MeNeill.	Master of Rolls, Rt. Hn. T.B.C. Smith.
Ld. Justice Clerk, Rt. Hn J. Inglis.	Attorney-General, Right Hon. J. D. Fitzgerald.
Lord Advocate, Rt. Hn. J. Moncreiff.	
Solicitor-General, E. F. Maitland, Esq.	Solicitor-General, Rickard Deasy, Esq.
Commander of Forces, Viscount Melville, K.C.B.	Commander of Forces, General Lord Seaton. G.C.B.

INDIAN DEPARTMENT.

COUNCIL.

PRESIDENT AND SECRETARY OF STATE—Sir Charles Wood.

VICE-PRESIDENT—Sir Frederick Currie.

Sir Erskine Perry.	Sir James Weir Hogg.
Sir Henry Conyngham Montgomery.	William Joseph Eastwick, Esq.
Gen. Sir Robert John Hussey Vivian.	Colonel Henry M. Durand, C.B.
Sir John Laird Mair Lawrence.	Ross Donelly Mangles, Esq.
Sir Proby Thomas Cautley.	Elliott Macnaghten, Esq.
John Pollard Willoughby, Esq.	Charles Mills, Esq.
William Arbuthnot, Esq.	Henry Thoby Prinsep, Esq.

UNDER SECRETARIES—Sir George Clerk and Mr. Baring, M.P.

ASSISTANT UNDER-SECRETARY OF STATE—James Cosmo Melvill, Esq.

CITY OFFICERS.

LORD MAYOR—Right Hon. JOHN CARTER (Cornhill, 1851).

SHERIFFS—Benjamin Phillips, Esq., Thomas Gabriel, Esq.

UNDER-SHERIFFS—Octavius T. Eagleton, Esq., Chas. Samuson, Esq.

CHAMBERLAIN—Scott, Esq.

RECORDER—Russell Gurney, Esq., Q.C.

ALDERMEN.

THE FOLLOWING HAVE PASSED THE CHAIR.

Laurie, Sir Peter, Knt.	Aldersgate Ward	1826
Copeland, William Taylor, Esq.	Bishopsgate	1829
Wilson, Samuel, Esq.	Bridge Without	1831
Humphery, John, Esq.	Aldgate	1835
Carroll, Sir George	Candlewick	1840
Duke, Sir James, Bart.	Farringdon Without	1840
Musgrove, Sir John, Bart.	Broad-street	1842
Challis, Thomas, Esq.	Cripplegate	1843
Sidney, Thomas, Esq.	Billingsgate	1844
Moon, Sir Francis Graham, Bart.	Portsoken	1844
Salomons, David, Esq.	Cordwainer	1848
Finnis, Thomas Quested	Tower	1848
Carden, Sir Robert Walter	Dowgate	1849
Wire, David Williams	Walbrook Ward,	1851

THE FOLLOWING HAVE NOT PASSED THE CHAIR.

Cubitt, William, Esq.	Langbourne	1851
Muggeridge, Sir Henry, Knt.	Castle Baynard	1851
Rose, William Anderson, Esq.	Queenhithe	1854
Lawrence, William, Esq.	Bread-street	1855
Hale, W. S., Esq.	Coleman-street	1856
Phillips, Benjamin Samuel, Esq.	Farringdon Within	1857
Gabriel, Thomas, Esq.	Vintry	1857
Mechi, John Joseph, Esq.	Lime-street	1858
Allen, W. F., Esq.	Cheap	1858
Conder, Edward, Esq.	Bassishaw	1858
Abbiss, James, Esq.	Bridge Within	1859

BANK OF ENGLAND.

GOVERNOR—Bonamy Dobree, Esq.

DEPUTY-GOVERNOR—Alfred Latham, Esq.

DIRECTORS.

Henry E. Chapman, Esq.	John Benjamin Heath, Esq.
Robert W. Crawford, Esq.	John Gellibrand Hubbard, Esq.
Benjamin W. Green, Esq.	Charles Frederick Huth, Esq.
Charles W. Greenfell, Esq.	K. D. Hodgson, Esq.
H Gibbs, Esq.	Henry L. Holland, Esq.
Arthur Edward Campbell, Esq.	Thos. N. Hunt, Esq.
William Cotton, Esq.	James Maleolmson, Esq.
James Pattison Currie, Esq.	James Morris, Esq.
George Joachim Göschen, Esq.	George Warde Norman, Esq.
James Alexander Guthrie, Esq.	Edward Howley Palmer, Esq.
Thomson Hankey, Esq.	Thomas Charles Smith, Esq.

GOVERNMENT OFFICES AND OFFICERS.

TREASURY.

Lords Commissioners—Viscount Palmerston, Right Hon. W. E. Gladstone; E. H. K. Hugessen, Esq.; Sir Wm. Dunbar, Bart.; John Bagwell, Esq.
Joint Secretaries—Hon. H. B. W. Brand, S. Laing, Esq.
Assistant Secretary—G. A. Hamilton, Esq.
Audit Civil List—G. Arbuthnot, Esq.
Principal Clerks—C. L. Crafer, Esq., W. H. Stephenson, Esq., W. G. Anderson, Esq., W. Seton, Esq
Private Secretaries to First Lord—C. G. Barrington, Esq., Hon. E. Ashley.
Solicitor—H. R. Reynolds, Esq.

EXCHEQUER.

Chancellor—Rt. Hon. W. E. Gladstone.
Comptroller—Lord Monteagle.
Assistant—Right Hon. Sir E. Ryan.
Chief Clerk—F. F. Ottey, Esq.
Private Secretary to Chancellor—C. L. Ryan, Esq.

PRIVY COUNCIL OFFICE.

Lord President—Earl Granville, K.G.
Clerk in Ordinary—Hon. W. L. Bathurst.
Chief Clerk—C. A. Hamilton, Esq.
Registrar—H. Reeve, Esq.
Private Secretary to Lord President—Lord F. Cavendish.

COMMITTEE OF COUNCIL ON EDUCATION.

President—Earl Granville.
Vice-President—Right Hon. Robert Lowe.
Secretary—R. R. W. Lingen, Esq.
Assistant Secretaries—S. Sykes, Esq., F. R. Sandford, Esq.

SCIENCE AND ART DEPARTMENT.

Secretary and Superintendent—H. Cole, Esq., C.B.
Assistant Secretary—N. MacLeod, Esq.

LORD GREAT CHAMBERLAIN'S OFFICE.

Lord Great Chamberlain—Lord Willoughby d'Eresby.
Secretary—R. Burrell, Esq.

CROWN OFFICE.

Clerk of Crown—C. Romilly, Esq.
Chief Clerk—J. R. Naylor, Esq.

PRIVY SEAL OFFICE.

Lord Privy Seal—Duke of Argyll.
Chief Clerk—W. Goodwin, Esq.

WAR OFFICE.

Secretary of State—Right Hon. S. Herbert.
Under Secretaries—Sir Ben. Hawes, K.C.B., Earl of Ripon,
Assistant Under Secretary—J. R. Godley, Esq.
Secretary of Military Correspondence—Sir E. Lugard, K.C.B.
Chief Clerk—H. R. Drewry, Esq.
Assistant Clerk—K. Bacon, Esq.
Private Secretary—J. M. Maynard, Esq.
Private Secretary to Sir B. Howes—J. W. Cooper, Esq.
Private Secretary to the Earl of Ripon—B. M. Seton, Esq.
Inspector-General of Forts—Sir J. Burgoyne, Bart., G.C.B.
Deputies—Major R. M. Laffan, Lieut.-Col. H. C. C. Owen, C.B.
Assistants—Major Jervois, R.E., Capt. Belfield, R.E
Director-General of Artillery—Major-General W. Cator, C.B.
Director-General of Army Medical Department—Dr. T. Alexander.
Chaplain-General—Rev. C. R. Gleig.
Director of Stores, &c.—Capt. Caffin, R.N., C.B.
Director of Contracts—T. Howell, Esq.
Director of Commissariat—S. Petrie, Esq.
Accountant-General—R. C. Kirby, Esq.
Assistant Accountant-General—W. Brown, Esq.
Solicitor—C. M. Clode, Esq.

IRISH OFFICE.

Chief Secretary—Rt. Hon. E. Cardwell.
Clerk—R. M. Bland, Esq.

HOME OFFICE

Secretary of State—Right Hon. Sir G. C. Lewis.
Under Secretaries—Geo. Clive, Esq., H. Waddington, Esq.
Chief Clerk—H. J. Knyvett, Esq.
Private Secretary—M. Drummond, Esq.

FOREIGN OFFICE.

Secretary of State—Lord John Russell.
Under Secretaries—Lord Wodehouse, E. Hammond, Esq.
Chief Clerk—G. L. Conyngham, Esq.
Private Secretary—Hon. G. F. S. Elliot.

COLONIAL OFFICE.

Secretary of State—Duke of Newcastle.
Under Secretaries—C. S. Fortescue, Esq., H. Merivale, Esq.
Assistant Secretary—T. F. Elliott, Esq.
Chief Clerk—Peter Smith, Esq., C.B.
Private Secretary—A. N. Birch, Esq
Registrar—W. A. Nunes, Esq.

COMMANDER-IN-CHIEF'S OFFICE.

General-Commanding-in-Chief—Duke of Cambridge, K.G.
Military Secretary—Major-General Sir C. Yorke, K.C.B.
Private Secretary—Lieut.-Col. Hon. J. Macdonald, C.B.

ADJUTANT-GENERAL'S OFFICE.

Adjutant-General—General G. A. Wetherall, K.C.B.
Deputy—Major-General W. F. Forster, K.H.
Chief Clerk—E. Houndle, Esq.

QUARTERMASTER-GENERAL'S OFFICE.

Quartermaster-General—Major-Gen. Sir R. Airey, K.C.B.
Deputy—Col. Hon. A. Gordon, C.B.
Confidential Clerk—J. O'Neil, Esq.

PAYMASTER-GENERAL'S OFFICE.

Paymaster-General—Right Hon. W. Cowper.
Assistant Paymaster-General—E. A. Hoffay, Esq.
Chief Clerk—P. Godfrey, Esq.

ADMIRALTY.

Lords Commissioners—Duke of Somerset, Vice-Admiral Sir R. S. Dundas, K.C.B., Rear-Admiral Hon. F. T. Pelham, C.B., Capt. Chas. Eden, C.B., Capt. Chas. Frederick, S. Whitbread, Esq.
Secretaries—Lord Clarence Paget, W. G. Romaine, Esq., C.B.
Accountant-General—Sir R. M. Bromley, K.C.B.
Surveyor—Sir B. W. Walker, Bt., C.B.
Storekeeper-General—Hon. R. Dundas.
Chief Clerk—C. H. Pennell, Esq.
Private Secretary—Capt. J. Moore.

BOARD OF TRADE.

President—Rt. Hon. T. Milner Gibson.
Vice-President—Rt. Hon W. Cowper.
Secretaries—James Booth, Esq., Sir J. Emerson Tennent.
Registrar—E. A. Bowring, Esq.
Private Secretary to President—H. G. alcraft, Esq.
Private Secretary to Vice-President—J. Gibb, Esq.
Assistant Secretary to Marine Department—T. H. Farrer, Esq.
Assistant Secretary to Railway Department—Capt. D. Galton, R.E.

STATISTICAL DEPARTMENT.

Director—A. Fonblanque, Esq.
Assistant—R. Valpy, Esq.

WOODS AND FORESTS.

Commissioners—Hon. C. A. Gore, Right Hon. J. K. Howard.
Principal Clerks—R. Rotton, Esq., J. F. Redgrave, Esq.

WORKS, PARKS, AND BUILDINGS.

Chief Commissioner—Right Hon. H. FitzRoy.
Secretary—A. Austin, Esq.
Assistant Secretary—G. Russell, Esq.
Private Secretary—J. B. Carter, Esq.

ROYAL MARINE OFFICE.

Deputy Adjutant-General—Major-Gen. S. R. Wesley.
Assistant Adjutant-General—Lieut.-Col. G. C. Langley.

DUCHY OF CORNWALL.

Lord Warden—H.R.H. the Prince Consort.
Chancellor—Lord Kingsdown.
Secretary—J. R. Gardiner, Esq.

POST OFFICE.

Postmaster-General—Earl of Elgin, G.C.B.
Secretary—Rowland Hill, Esq.
Assistant Secretaries—J. Tilley, F. Hill, Esqrs.
Private Secretary—O. T. Barlow, Esq.

CUSTOM HOUSE.

Chairman—Right Hon. Sir T. F. Fremantle, Bart.
Deputy—Hon. S. E. Spring Rice.
Secretary—Wm. Maclean, Esq.
Assistant Secretary—F. G. Gardner, Esq.

INLAND REVENUE OFFICE.

Chairman—C. Pressly, Esq.
Deputy—C. J. Herries, Esq.
Secretary—T. Keogh, Esq.
Assistant Secretaries—T. Dobson, Esq., T. Sargent, Esq.

AUDIT OFFICE.

Chairman—Edward Romilly, Esq.
Secretary—C. Macaulay, Esq.

POOR-LAW BOARD.

President—Right Hon. C. P. Villiers.
Secretaries—Chas. Gilpin, Esq., H. Fleming, Esq.
Assistant Secretaries—W. G. Lumley, Esq., F. Fletcher, Esq.

BOARD OF HEALTH.

President—Right Hon. C. P Villiers.
Secretaries—Chas. Gilpin. Esq., H. Fleming.
Assistant Secretary—W. G. Lumley, Esq.. F. Fletcher, Esq.

CIVIL SERVICE COMMISSION.

Commissioners—Right Hon. Sir E. Ryan, Sir J. G. S. Lefevre, K.C.B.
Secretary—J. G. Maitland, Esq.
Registrar—H. Mann, Esq.

COPYHOLD, &c., COMMISSION.

Commissioners—Wm. Blamire, Esq., G. Darby, Esq., H. C. Mules, Esq.
Board Clerk—H. Pyne, Esq.

CHARITY COMMISSION.

Unpaid Commissioner—Right Hon. R. Lowe.
Chief Commissioner—P. Erle, Esq.
Secretary—H. M. Vane, Esq.

ESTATES COMMISSION.

Ecclesiastical Commissioners—The Archbishops, Bishops, &c.
Church Estates Commissioners—Earl of Chichester, Viscount Eversley, W. Deedes, Esq.
Secretary—J. J. Chalk, Esq.

EMIGRATION COMMISSION.

Commissioners—T. W. C. Murdoch, Esq., Sir Frederick Rogers, Bart.
Secretary—S. Walcott, Esq.

ROYAL MINT.

Master—T. Graham, Esq.
Deputy and Comptroller—W. H. Barton, Esq.
Registrar and Accountant—R. F. Suft, Esq.

NATIONAL DEBT OFFICE.

Comptroller-General—Sir A. Y. Spearman, Bart.
Assistant Secretary—J. Higham, Esq.

PUBLIC WORKS LOAN OFFICE.

Chairman—J. G. Hubbard, Esq.
Deputy—Sir A. Y. Spearman, Bart.
Secretary—W. W. Willink, Esq.

TRINITY HOUSE.

Master—H.R.H. the Prince Consort.
Deputy—Rear-Admiral R. Gordon.
Secretary—P. H. Berthon, Esq.

HERALDS' COLLEGE.

Earl Marshal—Duke of Norfolk.
Registrar—R. Lawrie, Esq.
Secretary—E. S. Dendy, Esq.

JUDGE ADVOCATE-GENERAL'S OFFICE.

Judge Advocate-General—Right Hon. T. E. Headlam.
Deputy—S. C. Denison, Esq.
Chief Clerk—John Scolliek, Esq.

GENERAL REGISTER OFFICE.

Registrar-General—Geo. Graham, Esq.
Chief Clerk—Thomas Mann, Esq.

PUBLIC RECORD OFFICE.

Deputy Keeper—Sir F. Palgrave, K.H.
Secretary—C. Roberts, Esq.

STATE PAPER OFFICE.

Deputy Keeper—C. Lechmere, Esq.
First Clerk—R. Lemon, Esq.

CHANCERY.

Lord High Chancellor—Ld. Campbell.
Chief Secretary—H. R. V. Johnson, Esq.
Secretary of Presentations—P. H. Pepys, Esq.
Secretary of Com. Peace—N. J. Senior, Esq.
Registrar in Lunacy—C. N. Wilde, Esq.
Master of the Rolls—Sir J. Romilly.
Chief Secretary—W. G. Brett, Esq.
Under Secretary—A. Cox, Esq.
Accountant-General—W. Russell, Esq.
Lords Justices of Appeal—Sir James L. K. Bruce, Sir George J. Turner.
Secretaries—E. R. Turner, Esq., and L. K. Bruce, Esq.
Vice-Chancellors—Sir R. T. Kindersley, Sir John Stuart, Sir Wm. Page Wood.

QUEEN'S BENCH.

Lord Chief Justice—Sir A. J. E. Cockburn, Bart.
Judges—Sir William Wightman, Sir Charles Crompton, Sir Hugh Hill, Sir Colin Blackburn.

COMMON PLEAS.

Lord Chief Justice—Sir Wm. Erle.
Judges—Sir Ed. V. Williams, Sir Richard B. Crowder, Sir James S. Wilies, Sir J. B. Byles.

EXCHEQUER.

Lord Chief Baron—Sir F. Pollock.
Barons—Sir Samuel Martin, Sir G. W. Bramwell, Sir W. H. Watson, Sir W. F. Channell.

DUCHY OF LANCASTER.

Chancellor—Rt. Hon. Sir G Grey, Bart.
Attorney-General—T. F. Ellis, Esq.
Receiver-General—Lieut.-Gen. C. R. Fox.
Registrar—F. D. Danvers, Esq.

ADMIDALTY COURT.

Judge—Right Hon. S. Lushington, D.C.L.
Queen's Advocate—Sir J. D. Harding, D.C.L.
Admiralty Advocate—R. J. Phillimore, Esq., D.C.L.
Registrar—H. C. Rothery, Esq.

COURT OF ARCHES.

Principal—Right Hon. S. Lushington, D.C.L.
Registrar—J. Shepherd, Esq.

COURT OF PROBATE AND COURT OF MARRIAGE AND DIVORCE.

Judge Ordinary—Sir C. Cresswell.
Registrars—A. F. Bayford, Esq., C. J. Middleton, Esq., E. F. Jenner, Esq., H. L. Strong, Esq.

VICAR-GENERAL'S OFFICE.

Vicar-General—Travers Twiss, Esq., D.C.L.
Registrar—F. H. Dyke, Esq.

FACULTY OFFICE.

Master—The Right Hon. Stephen Lushington, D.C.L.
Registrar—Hon. J. Manners Sutton.
Deputy Registrar—E. C. Currey, Esq.

BANKRUCTCY COURT.

Commissioners—J. Evans, Esq., J. S. M. Fonblanque, Esq., R. G. C. Fane, Esq., E. Holryd, Esq., Serjeant E. Goulburn.
Chief Registrar—W. H. Whitehead, Esq.

INSOLVENT DEBTORS' COURT.

Commissioners—W. J. Law, Esq., Serjeant J. S. Murphy.
Chief Clerk—C. Dance, Esq.

ON THE RIVER AVON.

Day of Month.	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Aftern.	MOON. Sets at London. Morn.	MOON. Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Dock. Morn.	HIGH WATER AT Liverpool Dock. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	S	PALM SUNDAY	5 37	12 3 50	6 32	0 45	8 31	3 35	10	9 14	10 4	6 42	7 29
2	M	Day breaks 3h. 25m.	5 35	12 3 32	6 33	2 13	9 24	3 57	11	10 51	11 31	8 9	8 40
3	Tu	*Richard*	5 33	12 3 14	6 35	3 41	10 16	4 15	12	—	0 2	9 9	9 33
4	W	*St. Ambrose*	5 30	12 2 56	6 37	5 11	11 7	4 32	13	0 31	0 55	9 56	10 17
5	Th	Maundy Thursd.	5 28	12 2 38	6 38	6 40	11 59	4 47	○	1 18	1 39	10 38	10 58
6	F	GOOD FRIDAY	5 26	12 2 20	6 40	8 9	Morn.	5 5	15	2 0	2 20	11 20	11 42
7	S	Fire Insurance due	5 23	12 2 3	6 42	9 38	0 54	5 25	16	2 42	3 4	—	0 3
8	S	EASTER SUNDAY	5 21	12 1 46	6 43	11 2	1 50	5 52	17	3 25	3 45	0 23	0 43
9	M	Easter Monday	5 19	12 1 29	6 45	Morn.	2 47	6 27	18	4 5	4 25	1 3	1 24
10	Tu	Easter Tuesday	5 17	12 1 13	6 47	0 14	3 45	7 14	19	4 46	5 7	1 45	2 6
11	W	Day breaks 2h. 20m.	5 15	12 0 56	6 48	1 13	4 42	8 13	20	5 28	5 50	2 28	2 51
12	Th	Twilight ends 8h. 59m.	5 13	12 0 40	6 50	1 56	5 35	9 21	21	6 13	6 39	3 17	3 45
13	F	Cath. Emancip. pass., 1829	5 10	12 0 25	6 52	2 26	6 25	10 32	☾	7 7	7 39	4 17	4 55
14	S	Window Tax rep., 1851	5 8	12 0 10	6 53	2 49	7 12	11 45	23	8 17	8 59	5 37	6 20
15	S	LOW SUNDAY	5 6	11 59 55	6 55	3 7	7 55	Aftern.	24	9 42	10 23	7 1	7 37
16	M	[Easter Term begins	5 4	11 59 40	6 57	3 21	8 36	2 5	25	10 59	11 33	8 11	8 41
17	Tu	Battle of Culloden, 1745	5 2	11 59 26	6 58	3 34	9 16	3 14	26	—	0 3	9 4	9 22
18	W	Camb. and Oxf. Terms beg.	5 0	11 59 12	7 0	3 45	9 55	4 21	27	0 26	0 44	9 40	9 57
19	Th	*Alphege*	4 58	11 58 59	7 2	3 57	10 36	5 31	28	1 2	1 19	10 14	10 30
20	F	Emperor Napoleon III. born, 1808	4 55	11 58 46	7 3	4 11	11 18	6 44	29	1 36	1 52	10 45	11 1
21	S	Day breaks 2h. 37m.	4 53	11 58 34	7 5	4 27	Aftern.	7 57	●	2 7	2 23	11 18	11 34
22	S	2ND S. aft. EAST.	4 51	11 58 22	7 7	4 47	0 52	9 13	1	2 40	2 56	11 50	—
23	M	*St. George*	4 49	11 58 10	7 8	5 15	1 44	10 26	2	3 12	3 29	0 7	0 23
24	Tu	Twilight ends 9h. 31m.	4 47	11 57 59	7 10	5 53	2 39	11 31	3	3 45	4 1	0 39	0 57
25	W	*St. Mark*	4 45	11 57 48	7 12	6 53	3 37	Morn.	4	4 19	4 39	1 17	1 37
26	Th	Disturbances at Montreal, 1849	4 43	11 57 38	7 13	7 49	4 34	0 26	5	4 59	5 19	1 57	2 20
27	F	Monster Nugget of 156 lb. of gold shown to Queen, 1858	4 41	11 57 29	7 15	9 6	5 30	1 7	6	5 42	6 7	2 45	3 13
28	S	Mutiny of the *Bounty*, 1789	4 39	11 57 19	7 16	10 29	6 25	1 38	☽	6 35	7 6	3 44	4 19
29	S	3RD S. aft. East.	4 37	11 57 11	7 18	11 53	7 16	2 0	8	7 41	8 21	4 59	5 42
30	M	Battle of Fontenoy, 1745	4 35	11 57 2	7 20	Aftern.	8 7	2 20	9	9 4	9 45	6 23	7 0

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M	H. M.	H. M
Mercury.	1	5 25 M	0 9 A	6 52 A
	6	5 5	11 36 M	6 9
	11	4 49	11 8	5 26
	16	4 34	10 46	4 58
	21	4 22	10 31	4 40
	26	4 12	11 23	4 35
Venus.	1	6 48	2 44 A	10 42
	6	6 41	2 48	10 56
	11	6 35	2 51	11 9
	16	6 30	2 55	11 21
	21	6 27	2 59	11 31
	26	6 26	3 3	11 40
Mars.	1	1 51	5 42 M	9 33 M
	6	1 43	5 34	9 25
	11	1 34	5 25	9 16
	16	1 25	5 16	9 7
	21	1 14	5 6	8 58
	26	1 5	4 57	8 49
Jupiter.	1	10 16	6 28 A	2 45
	6	9 58	6 10	2 27
	11	9 41	5 52	2 8
	16	9 24	5 35	1 50
	21	9 8	5 18	1 32
	26	8 51	5 1	1 15
Saturn.	1	1 18 A	8 4	4 22
	6	0 58	8 28	4 2
	11	0 38	8 8	3 42
	16	0 18	7 48	3 22
	21	11 58 M	7 28	3 2
	26	11 38	7 8	2 42
Uranus.	1	7 32	3 31	11 30 A
	6	7 13	3 12	11 11
	11	6 54	2 53	10 52
	16	6 35	2 35	10 35
	21	6 16	2 16	10 16
	26	5 57	1 57	9 57

"YOUNG RAMBLES." PAINTED BY J. CLARK..—FROM "THE ILLUSTRATED LONDON NEWS."

BRITISH INSECTS AND BUTTERFLIES.

MARCH AND APRIL.

FEBRUARY passes into March, and March into April, but still winter has not yet fairly retreated. Yield it must at last, and will soon pass away. Already there are bees on the wing; early workers in their day and generation. How busy are they; wax, propolis, beebread, and honey are the objects of their search. Yet though the bees are on the wing, the garden snail still adheres to the wall or the paling; it refuses to unglue itself; it fears the east wind. So also do the little flat snails, which are multitudinous in our gardens; they ensconce themselves deeply under the roots of shrubby plants, and a thyme bed affords them a snug hybernaculum. The beautiful banded snail of our hedgerows still remains torpid, as also does another species confined to certain localities in our island (among which we especially notice the limepits near Dorking). This is the edible snail of the Continent—an introduced species. It is early in autumn that the edible snail begins to work out its burrow, gluing up, as it retreats into the recesses of its shell, not only the aperture, but the penetralia of its domicile; wall after wall being built up at intervals. Early it retires, late it reappears

Let us walk forth: the fields and the drainage streams are around us. Listen! What is that hoarse murmer of strange sounds? Simply a convocation of frogs; frogs restored to animation after their winter sleep. Croak, croak, croak in various keys resounds from every pool and ditch Return in a day or two, and gelatinous masses are floating about, soon to disappear, when in their stead myriads of tiny tadpoles, voracious little cannibals, will be found teeming in the muddy water These gelatinous masses are replete with frog-eggs; thence issue the tadpoles, and these in due time become frogs. The toad does not yet appear; he waits in burrow or crevice, or under the roots of bushes, till the keen winds of March have retreated. Neither the snake nor the lizard have yet crept forth from their hybernaculæ, but the water-newt may be seen in ponds and drainage courses, having emerged from the soft mud in which, during the winter, it took its quiet siesta.

March does not rouse into activity our truly hybernating mammalia; we must except the little pipistrelle bat, which leaves its retreat for an hour or two when the warm sunrays throw a transient gleam over the landscape, and glance into the old church-tower whereit hangs suspended by the hind claws in a state of half sleep. The squirrel, too is on the alert: it never fairly hybernates; but the dormouse, in its snug little nest, sleeps tranquilly, and the spring hedgehog has not broken asunder the mattress of leaves and dried herbage in which it has imbedded itself. But many insects are stirring. Beetles concealed under moss, grass-tufts, and stone heaps, under dried cowdung and beneath the decayed bark of aged trees, are now active, although they do not always emerge from their places of concealment.

The sulphur butterfly (we suppose March to be progressing) is now common; the peacock's eye (*Vanessa io*), and the small tortoiseshell (*Vanessa urticæ*) are by no means unfrequent. Of the latter, indeed, considerable numbers often issue from their retreats on the warm days of March; nay, even earlier in the more southern counties, and it has been noticed on the wing in the Isle of Wight on the 8th of January (*Loudon's Magazine of Natural History*, v., p. 595). There appears to be, at least, two broods of this species annually, one in June, another in September, and we may presume that it is chiefly from among the latter that so many individuals pass the winter in concealed retreat. The caterpillar of this species feed on the nettle: for sometime after exclusion from the eggs, they live together in little family associations, but they disperse as soon as their increasing size renders a larger supply of food necessary. They are of a blackish colour, with four yellowish stripes, two along the back, and one on each side. The body is beset with strong branched spines.

March draws to a close, the apple-blossoms are unfolding, the snail has unglued itself, aphides swarm on the rose and the honeysuckle, and ants and ladybirds are feasting upon them. Flora begins to deck the garden.

Already has the great humblebee emerged from its retreat; it is exploring garden and meadow, and busy will it be through the ensuing spring, summer, and autumn, till the approach of winter. There is something so curious and yet so little known with respect to the history of the humblebee (*Bombus terrestris*) that we are bound to give a sketch of it. The humblebee is a storer of honey, but its hive, or rather cell, is an underground chamber, often in the side of a bank of about six or eight inches in diameter, to which a long winding passage leads, capable of admitting the ingress and egress of two bees at a time. The population seldom exceeds one, or at most two, hundred individuals, and consists of females, males, and workers.

Now it would appear that of the females there are two sorts; a very large, and a smaller race. The large females, far exceeding in size all the other inmates of the subterranean apiary, produce (as we are assured by Huber and other authorities) males, females, and workers, or neuters, while the small females produce only male eggs The large females therefore may be regarded as the founders of every colony.

It is in autumn that the larvæ, both of the large and the small females, become duly transformed into perfect insects, the latter having the precedence. This is the pairing season, males as we have said being the product of the small females.

Let us follow up the history of one of the large females; on the approach of winter each, acting independently, retires to a little apartment lined with moss or bits of grass, distinct from the general vault, passing the cold season in a state of torpidity. In the spring they awake, each emerging and taking its own course, intent upon the business of founding a colony. Suppose, then, that one of these large queens has formed or enlarged a cavity—say in a bank, overgrown with briars and herbage—her next course is to construct cells: wax, pollen, and honey are the objects of her daily excursions. So rapidly is each cell built, that its construction requires little more than half an hour, and as rapidly is it stored with honey and pollen one or two eggs being placed within the larvæ thence issuing having a store of prepared food. The brood emerging from these eggs consists almost exclusively of workers, assiduous helpers to the parent, who has yet more work to go through. Her next brood consists of large and small females, and males; these appear in August and September; but, if Huber be correct (Linn., *Trans.*, vi. 285), some male eggs are laid in the spring with those that have to produce workers.

We have now, then, large and small females, males, and workers, all the produce of this one female or queen, who began to found the establishment. The workers are by far the most numerous, and to them is intrusted the reparation of the cells, and the spreading of wax over the roof. When in any of the cells one of the larvæ has spun its cocoon, and assumed the pupa state, it is their duty to remove the wax away from it, and after the pupa has attained to perfection, which takes place in about five days, to cut open the cocoon so that the perfect insect may emerge from its imprisonment. Their duty, moreover, is, supposing the store of honey and pollen to fail, to bring in supplies of similar food, and thus nourish the grubs, introducing it through a small hole into each cell, opened and stopped up again as occasion may demand

As the grubs increase in size, they make breaches in their cells, which it is necessary from time to time to repair with wax, or even enlarge, as necessity may require. Hard labour for the workers. In some apiaries there are forty or fifty, sometimes even sixty, once the residence of pupæ, now active bees: these are turned into store-vessels for honey. But it must not be supposed that there is a strict similarity between the cellpit of the humblebee and that of the ordinary hive-bee. Instead of vertical combs of wax, with hexagonal cells, we see either a single cluster of cells or a few irregular horizontal combs, one above another, and supported by pillars of wax Some are destined for the reception of eggs, some simply for honey, but of the latter most have been occupied, and are now left empty.

But what, during all this stir and bustle, is the great queen-mother doing? Let us suppose her surrounded by her worker progeny; these watch all her movements. She is about to deposit in the cells the eggs from which the second brood is to emerge as spring advances Actuated by some unaccountable instinct, the workers endeavour to seize these eggs as soon as laid and destroy them. The female has now to exert herself to the utmost, in order to prevent them from being all devoured; and it is only after she has driven them back several times, and roused their forces that she succeeds in securing their safety. Nay, even when she has deposited her eggs, with a store of food, and closed them up in the cells with wax, she has still to keep vigilant watch over them for six or eight hours, the workers still persevering in their assaults. After this period, strange to say the disposition of the workers become changed, their propensity for devouring the eggs ceases, and the female, giving up her charge, commits them to their care. From these eggs proceed a few large females, to be at a future day the founders of new colonies, some males and some small females closely resembling the workers, but attended by the males which form their court.

And now, as Huber assures us, the whole establishment is a scene of confusion, for these recently-perfected small females begin to prepare cells for their eggs, a proceeding which rouses the anger of the queen-mother to the highest pitch She assaults them with fury, endeavouring to drive them away; she puts her head into the cells and devours the eggs, but is herself in turn attacked and forced to retreat There is then a contention about the possession of cells; a squabble like that of rooks in a rookery, but tranquillity soon returns. The produce of these small females consists only of males, which pair with the large females in autumn; it is then that the latter retire to their hybernaculum and take their winter siesta, but many perish from floods and other casualties. On the setting in of winter the workers, the males, and the small females all die off, and the continuance of the race depends upon the few large females, which, reposing in their dormitory, wear through the winter.

Réaumur assures us that the males are not an idle race; they work hard at repairs, and make good any damage that may befal their common habitation. They remove any rubbish that may by chance accumulate, and also the bodies of such individuals as may die; but they do not forage for provisions. These males are rather larger than the small females, and their antennæ are longer and more slender.

There is another humble bee called the carder (*Bombus muscorum*), which is now roaming over meadow and garden. This bee, agreeing much in general habits with the common humblebee, selects a shallow excavation or little pit in the ground of about five or six inches in diameter. Over this it rears a dome of moss, intertwined with fibres of dried grass, and the like, the materials being as it were felted together. This dome, four or five inches in height, is lined internally with a coating of wax, in order to render it rain-proof. The hive thus constructed is not the work only of the queen, but the conjoint work of many individuals; her progeny and their mode of procedure is curious. The bees arrange themselves with some regularity into a file, as men do supplying buckets of water to a fire-engine, and are separated by intervals from each other; those which are farthest from the chosen locality collect the moss and vegetable fibres, making up a small felted bundle, which is passed on to the next worker in succession; and so it is transferred from worker to worker, not without additions, until the nestbuilders receive it, and add it to the rising fabric, thus labouring until the edifice is reared. A covered way, excavated and moss-concealed, leads to this domed chamber; it is long, extending often to the distance of twelve or fourteen inches, but is so narrow as only to admit a single bee, whether in its ingress or egress. The colony, however, is not very numerous, as may be supposed from the contracted limits of the domicile. At the same time, as it would appear, the carder bee resembles the humblebee in its general economy and mode of procedure.

April is merging into May, and many butterflies which have not hybernated have just burst their pupa-cerements, and are now on the wing. The cabbage butterfly (*Pontia brassicæ*) hovers over garden and orchard; it is on the wing throughout the whole of the summer, and its disgusting caterpillars penetrate into the heart of one of our most valuable vegetable esculents. There, too, flies the small white butterfly (*Pontia rapæ*), with its yellow underwings varied by dark scales. Closely allied to the foregoing, it is yet a very distinct species, as the dissimilarity of the caterpillars proves; but they are alike devastators of our garden produce, and the same cabbage is often replete with the disgusting larvæ of both species. What a transformation from a ravenous leaf-eating, rank-scented grub to a nectar sipping, aerial butterfly.

We may here allude to the pale-clouded butterfly (*Colias edusa*) figured in our Plate. This elegant species, the wings of which are of a delicate orange-yellow, broadly margined by black (with a black central dot on the anterior pair), is chiefly found along our south-eastern coast. In some years it abounds, while in others scarcely an example is to be met with. Its Continental range is very extensive. It is spread over temperate Europe generally. Mr. Burchell found it in South Africa, and Mr. Swainson states that he has seen specimens from the mountains of Nepaul. Are we quite sure that the species are identical?

In April, showers and sunshine alternate, and even snow-clouds and sleet-storms have not passed away; but the joyous month of May is at hand, and returning spring treads with a firmer footstep over the enamelled greensward. Insects and flowers now crowd upon us; let us give them welcome.

POSTAL REGULATIONS.

LETTERS AND NEWSPAPERS.

INLAND LETTERS.—All inland letters should be prepaid by an affixed stamp, otherwise double postage is charged. If the prepayment be insufficient, double the deficiency is charged. Letters weighing ½ oz. are charged 1d.; more than ½ oz. and not exceeding 1 oz., 2d.; and 2d. for every additional oz. or part thereof.

FOREIGN AND COLONIAL LETTERS, &c.—Although the prepayment of letters sent to the following countries be not compulsory, yet, if not prepaid, they are subject to the following increase of postage:—To or from places in Turkey, Egypt, and Syria, where France maintains post-offices, there will be charged a rate of 9d. per ½ oz., instead of 6d., the prepaid rate; to France, Sardinia, and Algeria, double postage; to Belgium (prepaid 6d.), unpaid, if sent direct, 8d.; *viâ* France, 10d. According to the regulations of the German Customs Union, no letter exceeding fifty grammes (a little more than 1¾ oz.) in weight, and containing any other inclosure in paper, can be allowed to circulate by the post.

NEWSPAPERS AND PERIODICALS published at intervals not exceeding thirty days, and bearing an impressed newspaper stamp, may be transmitted and retransmitted through the Post Office to all parts of the United Kingdom under the following regulations:—If readdressed, the previous address must be cut off (obliteration is not sufficient). Inattention to this will cause the publication to be dealt with as an unpaid letter. They must be posted within fifteen days from the date of issue, and folded so that the whole stamp or stamps are exposed to view, otherwise a postage of 1d. is charged in addition. There must be no inclosure, nor any mark or writing thereon except the address.

NEWSPAPERS SENT ABROAD.—As the usual impressed newspaper stamp counts for nothing, a postage-stamp must be affixed. When newspapers sent to British colonies have to pass through a foreign country they are liable (in addition to a postage of 1d.) to rates shown in the table of "Compulsory Payments." Unregistered publications, when sent to the colonies or abroad, are treated as book packets. Newspapers by private ships are charged 1d. Newspapers for India pay 2d. for every 4 oz.; above and not exceeding 8 oz., 3d.

BOOK POST.

INLAND.—The following are the rates of postage:—Not exceeding 4 oz., 1d.; above 4 oz. and not exceeding 8 oz., 2d.; above 8 oz. and not exceeding 1 lb., 4d.—2d. being charged for every additional ½ lb. or part thereof. Postage must be prepaid in full by means of postage-stamps affixed outside the packet, which must be either without cover or open at the ends so as to admit of the inclosure being removed for examination. A book packet may contain any number of separate books or other publications, and printed matter of any kind, sheets of music or manuscripts, prints or maps, or any quantity of paper, parchment, or vellum; all legitimate binding, mounting, or covering of a book, &c., or of a portion thereof, will be allowed, whether it be loose or attached; as also rollers, in the case of prints or maps; bookmarkers (whether paper or otherwise) in the case of books; and, in short, whatever is necessary for the safe transmission of literary or artistic matter, or usually appertaining thereto; but no patterns, or books of patterns (unless these consist merely of paper), can be allowed. No book packet may contain any written letter closed or open, or any inclosure sealed or otherwise closed against inspection; nor must there be any letter, nor any communication of the nature of a letter, written in any such packet, or in or upon its cover. Entries, however, merely stating who sends the book, &c., or to whom it is given, are not regarded as a letter. No book packet must exceed two feet in length, width, or depth. In any case in which these regulations are infringed the packet will be charged unpaid-letter rate.

COLONIAL.—On the same conditions as the foregoing, and at the following charges (except that no packet weighing more than 3lb. can be sent to the East Indies or New South Wales), book packets can be forwarded to any British colony. To India, Ceylon, New South Wales, Victoria, Tasmania (Van Diemen's Land), South Australia, Western Australia, New Zealand, Mauritius, and Hong-Kong, the charge is as follows:—4 oz., 4d.; more than 4 oz., but not exceeding 8 oz., 8d.; more than 8 oz., but not exceeding 1 lb., 1s. 4d., and so on; 8d. being charged for every additional ½lb. or fraction thereof. Charges to every other British colony:—4 oz., 3d.; more than 4 oz., but not exceeding 8 oz., 6d.; more than 8 oz., but not exceeding 1 lb., 1s., and so on; 6d. being charged for every additional ½ lb. or fraction thereof. Book packets to or from India and New South Wales are limited to packages not exceeding 3 lb.

FOREIGN is subject to the same regulations as the inland postage, with the exception that no book, paper, or publication sent must contain any writing or manuscript mark of any sort. Rates of postage (which must be paid in advance) chargeable upon registered newspapers and other printed papers sent to Belgium, France, Algeria, or the French offices in Turkey, Syria, and Egypt:—For a packet of registered newspapers not exceeding 4 oz., 1d; above 4 oz. and not exceeding 8 oz., 2d.; and then 2d. for every additional 8 oz. or part thereof. For a packet of other printed papers not exceeding 4 oz., 3d; above 4 oz. and not exceeding 8 oz., 6d.; and then 6d. for every additional 8 oz. or part thereof. Rates of postage (which must be paid in advance) chargeable upon book packets, including newspapers and othe printed papers, addressed to Sardinia, Tuscany, Parma, Modena, and Venetian Lombardy, or other places in the Austrian dominions, when specially addressed *viâ* Sardinia:—For a packet of registered newspapers not exceeding 4 oz., Sardinia, 2d.; Tuscany, &c., from a port in Sardinia, 4d.; above 4 oz. and not exceeding 8 oz., Sardinia, 4d.; Tuseany, &c., from a port in Sardinia, 8d.; and so on, two rates being charged for every additional 8 oz. or part thereof. No packet must exceed 18 inches in length, width, or depth. For a packet of books or other printed papers not exceeding 4 oz., Sardinia, 4d.; Tuscany, &c., 6d.; above 4 oz. and not exceeding 8 oz., Sardinia, 8d.; Tuscany, &c., 1s., and so on, two rates being charged for every additional 8 oz. or part thereof. No packets of books or newspapers can be sent to the Austrian dominions, *viâ* Sardinia, if it weighs more than one pound, or exceeds 24 inches in length. As regards packets sent through France (except to the countries in the foregoing table of rates) the term "printed papers" does not include cases, or rollers, or maps, bookmarkers, pens, pencils, &c., but does include Parliamentary proceedings, books of every kind, sheets of music, and prints. Periodical works, not of daily publication, issued in the shape of pamphlets, may be sent by private ships to the United States at the following rates:—Not exceeding 2 oz., 1d.; 2 oz. and not exceeding 3 oz., 6d., and 2d. for every ounce or part thereof, up to 16 oz. The packet must be prepaid, and always sent in a cover open at the ends. Other printed papers or books (except those specified) to the above places are subject to letter rates.

FOREIGN AND COLONIAL LETTERS.

COMPULSORY PREPAYMENT.

To most places abroad prepayment is optional; but to others, of which a select list is given below, it is compulsory, and letters posted to these places unpaid are sent to the Return Letter Office in London.

PLACE.	RATES OF POSTAGE. LETTERS. Not exceeding ½ oz.	LETTERS. Above ½ oz. and not exceeding ½ oz.	BOOKS. Registered Newspapers and other Publications with Newspaper privilege.	BOOKS. Unregistered Newspapers, &c., Books, and all other printed matter.
	s. d.	s. d.		
Africa, West Coast of	0 6	0 6	1d each.	Not exc. 4oz. 3d.
Antigua	0 6	0 6	1d. „	„ 4 „ 3d.
Ascension	0 6	0 6	1d. „	„ 4 „ 3d.
Australian Colonies, *via* Southampton and Suez	0 6	0 6	1d. „	„ 4 „ 4d.
„ *via* Marseilles	0 9	1 0	3d. and 4d.	Letter Rate.
Bathurst (Gambia)	0 6	0 6	1d. each.	Ditto.
Bolivia	2 0	2 0	2d. „	Ditto.
Borneo, by private ship	0 6	0 6	1d. „	Ditto.
„ *via* Marseilles and India	0 9	1 0	4d. „	Ditto.
„ *via* Southampton and India	0 6	0 6	2d. „	Ditto.
Brazil	1 0	1 0	1d. „	Ditto.
Buenos Ayres	1 0	1 0	1d. „	Ditto.
Cadiz, *via* Southampton	2 2	2 2	1d. „	Ditto.
„ *via* France	0 8	0 11	Not exc. 4oz. 1d.	Not exc. 4oz. 3d
California, *via* United States	1 2½	1 2½	2d. each.	Letter Rate.
„ *via* Colon, New Grenada	2 4	2 4	4d. „	Ditto.
Carthagena (S. A.)	1 0	1 0	1d. „	Ditto.
Cayenne	0 6	0 6	1d. „	Ditto.
Ceylon, *via* Marseilles	0 9	1 0	3d. „	Ditto.
Chagres	1 0	1 0	1d. „	Ditto.
Chili	2 0	2 0	2d. „	Ditto.
China, *via* Marseilles	0 9	1 0	3d. „	Ditto.
„ *via* Southampton (except Hong-Kong	0 6	0 6	1d. „	Ditto.
Costa Rica	2 3	2 3	1d. „	Ditto.
Cuba	2 3	2 3	1d. „	Ditto.
„ *via* United States	1 2½	1 2½	2d. „	Ditto.
Dardanelles, *via* France and Austria	1 2	2 4	Not exc. 4oz. 1d.	Not exc. 4oz. 3d.
Ecuador	2 0	2 0	3d. each.	Letter Rate.
Egypt, *via* Marseilles	0 9	1 0	3d. „	Ditto.
„ *via* Southampton	0 6	0 6	1d. „	Ditto.
„ *via* Belgium (except Alexandria)	1 0	1 0	2½d. „	Ditto.
Falkland Islands	0 6	0 6	1d. „	Not exc. 4oz. 3d.
Fernando Po	0 6	0 6	1d. „	Ditto.
Gibraltar	0 6	0 6	1d. „	Ditto.
„ *via* France	0 9	1 0	Not exc. 4oz. 1d.	Ditto.
Grenada	0 6	0 6	1d. each.	Ditto.
Guadaloupe	1 5	1 5	1d. „	Letter Rate.
Guatemala	0 6	0 6	1d. „	Ditto.
Havannah	2 3	2 3	1d. „	Ditto.
„ *via* United States	1 2½	1 2½	2d. „	Ditto.
Hayti (St. Domingo)	1 5	1 5	1d. „	Ditto.
Heligoland, by private ship	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ *via* Hamburg	0 8	0 8	1d. „	Letter Rate.
Hong-Kong, *via* Marseilles	0 9	1 0	2d. „	Ditto.
„ *via* Southampton	0 6	0 6	1d. „	Not exc 4oz. 4d.
Ionian Islands, by private ship	0 6	0 6	1d „	Ditto.
Jamaica	0 6	0 6	1d. „	Ditto.
Java, *via* Marseilles	0 9	1 0	3d. „	Letter Rate.
„ *via* Southampton	0 6	0 6	1d. „	Ditto.
„ *via* Holland	0 8	0 8	2d. „	Ditto.
Labuan, by private ship	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ *via* Marseilles and India	0 9	1 0	4d. „	Letter Rate.
„ *via* Southampton	0 6	0 6	2d. „	Ditto
Luxemburg (Duchy of), *via* Belgium	0 6	0 6	Not exc. 4oz. 1d.	Ditto.
Madeira	1 10	1 10	1d. each.	Ditto.
„ *via* Lisbon	1 9	1 9	1d. „	Ditto.
Malta, *via* Marseilles	0 9	1 0	3d. „	Ditto.
„ *via* Southampton	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ by French packet, *via* Marseilles	0 9	1 0	Not exc. 4oz. 1d.	Letter Rate.
Martinique	1 5	1 5	1d. each.	Ditto.
Mexico	2 3	2 3	1d. „	Ditto.
„ *via* United States	1 5	1 5	2d. „	Ditto.
Monte Video	1 0	1 0	1d. „	Not exc. 8oz. 6d.
Natal	0 6	0 6	1d. „	„ 4 „ 3d.
New Zealand, *via* Southampton and Suez	0 6	0 6	1d. „	„ 4 „ 4d.
„ *via* Marseilles and Suez	0 9	1 0	2d. „	Letter Rate.
Pacific (any place in)	2 0	2 0	3d. „	Ditto.
„ *via* Brazil	2 7	2 7	1d „	Ditto.
Panama	1 0	1 0	1d. „	Ditto.
Peru	2 0	2 0	3d. „	Ditto.
Philippine Islands, by private ship	0 6	0 6	1d. „	Ditto.
„ „ *via* Marseilles and India	0 9	1 0	4d. „	Ditto.
„ „ *via* Southampton&India	0 6	0 6	2d. „	Ditto.
Poland, *via* Belgium (Registered)	2 0	2 0	1d. „	Ditto.
Portugal	1 9	1 9	1d. „	Ditto.
„ *via* France	0 8	0 11	Not exc. 4oz. 1d.	Not exc. 4oz. 3d.
„ *via* Brazil packet	1 9	1 9	1d. each	Letter Rate.
Russia, *via* Belgium (Registered)	2 0	2 0	1d. „	Ditto.
St. Juan de Nicaragua	2 3	2 3	1d. „	Ditto.
St. Vincent (West Indies)	0 6	0 6	1d. „	Not exc. 4oz. 3d.
Sandwich Islands, *via* United States	1 2½	1 2½	2d. „	Ditto.
„ „ *via* Panama	2 4	2 4	4d. „	Letter Rate.
Scutari (Asia), *via* Belgium	0 8	0 8	2½d. „	Ditto.
Sicilies (Two), *via* Belgium	0 8	0 8	2½d. „	Ditto.
Spain (Cadiz and Vigo excepted)	0 8	0 11	Not exc. 4oz. 1d.	Not exc. 4oz. 3d.
„ *via* Southampton (including Cadiz and Vigo)	2 2	2 2	1d. each.	Letter Rate.
Syria, *via* Marseilles by French packet	0 6	1 0	Not exc. 4oz. 1d.	Not exc. 4oz.3d
Tangiers, *via* France	0 6	1 0	„ 4 „ 1d.	„ 4 „4d
Tasmania, *via* Southampton and Suez	0 6	0 6	1d. each.	„ 4 „ 4d
„ *via* Marseilles and Suez	0 9	1 0	3d. „	Letter Rate.
Tunis, *via* Marseilles by French packet	0 6	1 0	Not exc. 4oz. 1d.	Not exc. 4oz. 3d.
Turkey, *via* Belgium	0 8	0 8	(exc. the places specified) 2d.	Letter Rate.
United States, by private ship	0 6	0 6	1d. each.	Ditto.
Vancouver's Island, by private ship	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ *via* Panama	2 4	2 4	4d. „	Letter Rate.
Victoria (Australia), *via* Southampton and Suez	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ „ *via* Marseilles and Suez	0 9	1 0	3d. „	Letter Rate.
Vigo, *via* Southampton	2 2	2 2	1d. „	Ditto.
West Coast South America	2 0	2 0	3d. „	Ditto.
West Indies (British)	0 6	0 6	1d. „	Not exc. 4oz. 3d.
West Indies (Foreign), except Cuba, St. Thomas, St. Croix, St. Martin, and Eustatius	1 5	1 5	1d. „	Letter Rate.
West. Australia, *via* Southampton, Suez	0 6	0 6	1d. „	Not exc. 4oz. 3d.
„ *via* Marseilles and Suez	0 9	1 0	3d. „	Letter Rate.
Wurtemberg, *via* France	0 6	1 0	Not exc. 4oz. 1d.	Not exc. 4oz. 3d.

MAYING.

Day of Month.	Day of Week.	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Aftern.	MOON. Sets at London Morn.	MOON. Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Docks. Morn.	HIGH WATER AT Liverpool Docks. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	Tu	*S. Phil. & S. Jas.*	4 34	11 56 55	7 21	2 44	8 56	2 36	10	10 22	10 58	7 36	8 9
2	W	[Prince Arthur born, 1850	4 32	11 56 48	7 23	4 11	9 47	2 52	11	11 31	11 59	8 37	9 2
3	Th	Invent. of Cross	4 30	11 56 41	7 25	5 38	10 39	3 8	12	—	0 24	9 26	9 50
4	F	Seringapatam taken, 1799	4 28	11 56 35	7 27	7 6	11 33	3 27	13	0 48	1 12	10 13	10 36
5	S	Bonaparte died, 1821	4 26	11 56 30	7 28	8 32	Morn.	3 50	○	1 35	1 58	10 59	11 21
6	☽	4TH S. aft. EAST.	4 24	11 56 25	7 29	9 52	0 31	4 21	15	2 21	2 43	11 43	—
7	M	[Record of the Franklin Expedition found, 1859.	4 23	11 56 20	7 31	10 57	1 29	5 3	16	3 5	3 26	0 4	0 24
8	Tu	Easter Term ends	4 21	11 56 16	7 33	11 49	2 28	5 59	17	3 46	4 7	0 45	1 5
9	W	Massacre of Glencoe, 1691	4 19	11 56 13	7 34	Morn.	3 24	7 3	18	4 27	4 49	1 27	1 49
10	Th	Day breaks 1h. 29m.	4 18	11 56 11	7 36	0 25	4 16	8 16	19	5 11	5 33	2 11	2 33
11	F	Twilight ends 10h. 31m.	4 16	11 56 9	7 37	0 51	5 5	9 28	20	5 55	6 20	2 58	3 24
12	S	Strafford beheaded, 1641	4 15	11 56 7	7 39	1 11	5 50	10 41	☾	6 46	7 12	3 50	4 18
13	☽	ROGATION SUN.	4 13	11 56 6	7 40	1 26	6 32	11 52	22	7 40	8 14	4 52	5 29
14	M	Henry IV. assassinated, 1610	4 11	11 56 6	7 42	1 39	7 13	Aftern.	23	8 51	9 25	6 3	6 36
15	Tu	Martial Law proclaimed at Meerut, 1857	4 10	11 56 6	7 43	1 52	7 52	2 8	24	9 58	10 30	7 8	7 37
16	W	O'Connell died, 1847	4 8	11 56 7	7 45	2 4	8 32	3 17	25	10 59	11 27	8 5	8 32
17	Th	Ascension Day. Holy Th.	4 7	11 56 9	7 46	2 17	9 14	4 28	26	11 54	—	8 54	9 13
18	F	French Empire est., 1804	4 6	11 56 11	7 48	2 32	9 58	5 42	27	0 16	0 35	9 32	9 51
19	S	*Dunstan*	4 4	11 56 14	7 49	2 51	10 45	6 57	28	0 54	1 13	10 11	10 31
20	☽	S. aft. ASCEN. D.	4 3	11 56 17	7 50	3 17	11 37	8 12	●	1 33	1 53	10 50	11 9
21	M	Day breaks 0h. 28m.	4 2	11 56 21	7 52	3 51	Aftern.	9 21	1	2 12	2 31	11 28	11 47
22	Tu	Trinity Term begins	4 0	11 56 25	7 53	4 38	1 30	10 21	2	2 50	3 9	—	0 6
23	W	Sir J. Franklin sailed, 1845	3 59	11 56 30	7 55	5 41	2 29	11 7	3	3 28	3 48	0 26	0 47
24	Th	Queen Victoria born, 1819	3 58	11 56 35	7 56	6 54	3 26	11 40	4	4 9	4 30	1 8	1 29
25	F	Princess Helena born, 1846	3 57	11 56 41	7 57	8 17	4 21	Morn.	5	4 51	5 13	1 51	2 15
26	S	Oxford Easter Term begins	3 56	11 56 47	7 58	9 42	5 13	0 6	6	5 37	6 3	2 41	3 10
27	☽	WHIT SUNDAY	3 55	11 56 54	8 0	11 6	6 3	0 25	☽	6 32	7 2	3 40	4 12
28	M	[Camb. Term divides	3 54	11 57 1	8 1	Aftern.	6 52	0 42	8	7 34	8 7	4 45	5 19
29	Tu	King Charles II. restored	3 53	11 57 8	8 2	1 53	7 41	0 57	9	8 41	9 16	5 54	6 27
30	W	Oxford Trinity Term begins	3 52	11 57 16	8 3	3 17	8 30	1 13	10	9 49	10 21	6 59	7 30
31	Th	Mutiny at Lucknow, 1857	3 51	11 57 25	8 4	4 43	9 23	1 30	11	10 52	11 23	8 1	8 31

PLANETS.	Day of M	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	4 2 M	10 20 M	4 39 A
	6	3 53	10 21	4 50
	11	3 44	10 26	5 8
	16	3 37	10 35	5 34
	21	3 31	10 47	6 5
	26	3 28	11 4	6 43
Venus.	1	6 23	3 6 A	11 46
	6	6 27	3 8	11 49
	11	6 31	3 11	11 51
	16	6 34	3 11	11 48
	21	6 38	3 11	11 44
	26	6 43	3 10	11 37
Mars.	1	0 54	4 46 M	8 38 M
	6	0 43	4 35	8 27
	11	0 31	4 24	8 17
	16	0 18	4 12	8 6
	21	0 6	3 59	7 52
	26	11 48 A	3 45	7 38
Jupiter.	1	8 35 M	4 44 A	0 56
	6	8 19	4 27	0 39
	11	8 3	4 11	0 22
	16	7 48	3 55	0 5
	21	7 33	3 39	11 45 A
	26	7 17	3 23	11 29
Saturn.	1	11 19	6 49	2 23 M
	6	11 0	6 30	2 4
	11	10 41	6 11	1 45
	16	10 23	5 52	1 25
	21	10 4	5 33	1 6
	26	9 47	5 15	0 46
Uranus.	1	5 37	1 39	9 41 A
	6	5 18	1 20	9 22
	11	5 0	1 2	9 4
	16	4 41	0 44	8 47
	21	4 22	0 25	8 28
	26	4 4	0 7	8 10

"NATURE'S MIRROR." BY WALTER GOODALL.—FROM "THE ILLUSTRATED LONDON NEWS."

PUBLIC ACTS OF PARLIAMENT OF THE LAST TWO SESSIONS

PASSED IN THE 22ND AND 23RD YEARS OF HER MAJESTY'S REIGN.

**** *The figure before each Act denotes the chapter, and the date after each Act records the exact time of its passing.*

SESSION 22ND VICTORIA.

Cap. 1. An Act more effectually to Prevent Danger to the Public Health from Vaults or Places of Burial. March 25, 1859.

2. An Act to Repeal certain Acts and Parts of Acts which relate to the Observance of the 30th of January, King Charles Martyrdom; the 29th of May, the Restoration; the 5th of November, the Gunpowder Plot; and, in Ireland, the 23rd of October, Irish Rebellion and Massacre, 1641. The Observance of such Anniversary Days is hereby abolished. March 25, 1859.

3. An Act to Authorise the Inclosure of certain Lands in Pursuance of a Report of the Inclosure Commissioners for England and Wales. March 25, 1859.

4. The usual Annual Act for Punishing Mutiny and Desertion, and for the Better Payment of the Army and their Quarters. March 25, 1859.

5. The usual Annual Act for Regulation of the Royal Marine Forces while on Shore. March 25, 1859.

6. An Act to Apply £1,222,383 8s. 9d. out of the Consolidated Fund to the Service of the Year ending March 31, 1859. March 25, 1859.

7. An Act to Apply £11,000,000 out of the Consolidated Fund to the Service of the Year 1859. March 25, 1859.

8. An Act to Repeal Sec. 32 of the 9 and 10 Vic., c. 95 (County Court Act), by which the Execution of Process by the High Bailiffs of Westminster and Southwark is Transferred to the Ordinary County Court High Bailiffs, as in other Cases. March 25, 1859.

9. An Act by which her Majesty Exchanges her Advowson of Welton with Mellon Vicarage with Miss Sophia Broadley, of Welton House, Yorkshire, for her Rectory of Ecton, Northamptonshire. March 25, 1859.

10. An Act Settling the Form of Affirmation to be Made in certain Cases by Quakers and other Persons by Law Permitted to Make an Affirmation instead of Taking on Oath. April 8, 1859.

11. An Act to Enable the Secretary of State in Council of India to Raise Money in the United Kingdom for the Service of the Government of India. April 8, 1859.

12. An Act to Make further Provision for the Purchase of Common and other Lauded Rights by her Majesty's Principal Secretary of State for the War Department, and in Relation to Land Vested in or Taken by such Secretary of State. April 8, 1859.

13. An Act to Amend the Patent Law with Respect to Inventions for Improvements in Instruments and Munitions of War, Providing for the Assignment of such Patents to Government, and Protecting the Inventors' Communications to the Secretary of State. April 1, 1859.

14. An Act for the Abolition of Manor Courts and the Better Recovery of Small Debts in Ireland. April 19, 1859.

15. An Act to Indemnify Persons in the United Kingdom who have Omitted to Qualify Themselves for Offices and Employments, and to Extend to the 25th of March, 1860, the Time Limited for such Purposes respectively. April 19, 1859.

16. An Act to Enable the Judges to Appoint Commissioners within Ten Miles of London, and in the Isle of Man and the Channel Islands, to Administer Oaths in Common Law, and to Authorise the Taking in the County of Bail in Error and Recognisances, and Bail on the Revenue Side of the Exchequer. April 19, 1859.

17. An Act to Continue to the 1st of January, 1861, the 11 and 12 Vic., c. 133, an Act for Amending the Laws Relating to Savings Banks in Ireland. April 19, 1859.

18. An Act for Amending and Confirming a Scheme of the Charity Commissioners for Sir Thomas White's Charity, and the Free Grammar School in the Town of Nottingham. April 19, 1859.

19. An Act to Make further Provision for Enabling the Commissioners of Works to Acquire a Site for Additional Public Offices near Whitehall and the Houses of Parliament at Westminster. April 10, 1859.

20. An Act to Provide for Taking under Order of a Court or Judge Evidence Relative to a Suit or Proceeding Pending before a Tribunal in her Majesty's Dominions, in some other Place or Colony also within her Majesty's Dominions, but out of the Jurisdiction of such Tribunal. April 19, 1859.

21. An Act Amending the 21 and 22 Vic., c. 90, the Medical Act of 1858, and Enabling Foreign Doctors to be Resident Physicians or Medical Officers in Hospitals for the Relief of Foreigners. April 19, 1859.

22. An Act for Raising £13,277,400 by Exchequer Bills for the Service of 1859. April 19, 1859.

23. An Act to Apply a Sum out of the Consolidated Fund to the Service of the Year 1859, and to Appropriate the Supplies Granted in this Session of Parliament. April 19, 1859.

24. An Act to Render Valid certain Marriages in the Church of St. James, Baldersby, in the County of York. April 19, 1859.

25. An Act for the Government of the Convict Prisons in her Majesty's Dominions Abroad. April 19, 1859.

26. An Act to Amend the Laws concerning Superannuations and other Allowances to Persons having Held Civil Offices in the Public Service. April 19, 1859.

27. An Act to Facilitate Grants of Land to be Made near Populous Places for the Use of Regulated Recreation of Adults and as Playgrounds for Children. April 19, 1859.

28. An Act to Continue for Ten Years from this Act, and thence to the End of the then next Session of Parliament, the 11 and 12 Vic., c. 58, an Act for the Regulation of the Annuities and Premiums of the Naval Medical Suplemental Fund Society. April 19, 1859.

29. An Act to Continue till the 30th of September, 1860, and to the End of the then next Session of Parliament, the 20 and 21 Vic., c. 18, an Act for Charging the Maintenance of certain Paupers upon the Union Funds. April 19, 1859.

30. An Act to Amend the Conformation and Probate Act of 1858. April 19, 1859.

31. An Act to Confirm certain Provisional Orders under the Local Government Act of 1858. April 19, 1859.

32. An Act to Amend the Law concerning the Remissions of Penalties, by which Act Penalties for Offences may be Remitted by the Crown, although payable to Parties other than the Crown. April 19, 1859.

33. An Act to Enable Coroners in England to Admit to Bail Persons Charged with Manslaughter. April 19, 1859.

34. An Act to Amend and Explain (so as to Allow Agreements between Workmen and Others in certain Cases) the 6 Geo. 4, c. 129, an Act Repealing the Laws Relating to the Combination of Workmen, and Making other Provisions in lieu Thereof. April 19, 1859.

35. An Act to Amend the Law Relating to Municipal Elections. April 19, 1859.

SESSION 22ND & 23RD VICTORIA.

1. An Act to Provide for the Authentication of Certain Orders of the Privy Council in the Absence of the Clerk of the Council in Ordinary. July 21, 1859.

2. An Act to Apply £7,000,000 out of the Consolidated Fund to the Service of 1859. August 1, 1859.

3. An Act to Amend and Make Perpetual the Public Health Act of 1858. August 1, 1859.

4. An Act to Amend the Act for the Better Administration of Criminal Justice in Middlesex, giving the Assistant Judge an Additional £300 a Year, and Preventing Him, on Taking It, from Practising as a Barrister; also, Empowering the Secretary of State to Appoint a Person to Assist such Assistant Judge in Certain Cases, and Extending the Jurisdiction of the Middlesex Sessions. August 8, 1859.

5. An Act to Remove Doubts as to the Qualification of Persons Holding Diplomatic Pensions to Sit in Parliament. August 8, 1859.

6. An Act to Enable Serjeants, Barristers, Attorneys, and Solicitors to Practise in the High Court of Admiralty. August 8, 1859.

7. An Act to Amend the 17 and 18 Vic., c. 59, an Act for Allowing Verdicts on Trials by Jury in Civil Causes in Scotland to be Received, although the Jury may not be Unanimous. August 8, 1859.

8. An Act to Amend the 20 and 21 Vic., c. 45, an Act Relating to the Survey of Boundaries in Ireland. August 8, 1859.

9. An Act to Provide for the Exercise of the Duties of Chief Superintendent in China in Certain Cases. August 8, 1859.

10. An Act to Empower the Legislature of Canada to Make Laws Regulating the Appointment of a Speaker of the Legislative Council. August 8, 1859.

11. An Act to Confirm Certain Provisional Orders under the Local Government Act of 1859. August 8, 1859.

12. An Act to Repeal as Regards the Colony of Victoria, and to Enable other Colonial Legislatures to Repeal, Certain Provisions of the Imperial Acts of 54 Geo. 3, c. 15, and 5 and 6 Will. 4, c. 62. August 8, 1859.

13. An Act to Enable her Majesty to Confirm an Act Passed by the Legislature of Antigua intituled "An Act to Extend the Operation of the Laws of Antigua to the Island of Bermuda." August 8, 1859.

14. An Act to Amend the 39 and 40 Geo. 3, c. 99, an Act for Better Regulating the Business of Pawnbrokers. August 8, 1859.

15. An Act to Suspend the Making of Lists and the Ballots for the Militia of the United Kingdom. August 8, 1859.

16. An Act to Enable the Commissioners of Works to Acquire a Site for the Purpose of the Court of Probate and other Courts and Offices. Aug. 8, 1859.

17. An Act to Prevent Vexatious Indictments for Certain Misdemeanours, viz, Perjury, Subornation of Perjury, Conspiracy, Obtaining Money or Property by False Pretences, Keeping a Gambling House or a Disorderly, or for Indecent Assaults. August 8, 1859.

18. An Act for Granting Additional Rates of Income Tax of 4d. and 2d. in the Pound in England, and 1½d. in Scotland and Ireland, and to Reduce from Eighteen to Twelve Weeks the Period of Credit Allowed for Payment of the Excise Duty on Malt begun to be Made after October, 1859. August 13, 1859.

19 An Act to Repeal Part the 13 Elizabeth, c. 29, an Act Concerning the Several Incorporations of the Universities of Oxford and Cambridge, and the Confirmation of the Charters, Liberties, and Privileges Granted to Either of Them. August 13, 1859.

20. An Act to Amend and Consolidate the Laws Relating to Military Savings Banks. August 13, 1859.

21. An Act to Regulate the Office of Queen's Remembrancer, and to Amend the Practice and Procedure on the Revenue Side of the Court of Exchequer. August 13, 1859.

22. An Act to Amend the Acts relating to the Constabulary Force in Ireland. August 13, 1859.

23. An Act to Continue for Two Years Certain Acts Relating to the Collection of County Cess in Ireland. August 13, 1859.

24. An Act to Remove Doubts as to the Admission to the Office of Principal in the Universities of Scotland. August 13, 1859.

25. An Act to Continue for Five Years Certain Acts Relating to Linen, Hempen, and other Manufactures in Ireland. August 13, 1859.

26. An Act to Make Further Provision for the Regulation of the Trade with the Indians, and for the Administration of Justice, in the North-Western Territories of America. August 13, 1859.

27. An Act to Repeal the 31st section of the 16 and 17 Vic., c. 95, and to Alter the Limit of the Number of European Troops to be Maintained for Local Service in India. August 13, 1859.

28. An Act to Amend the 16 and 17 Vic., c. 207, the Galway Harbour and Port Act, 1853. August 13, 1859.

29. An Act to Repeal a Certain Toll upon Fishing Vessels Passing the Nore. August 13, 1859.

30. An Act to Extend the Enactments, Penalties, and Provisions Concerning the Present Copper Coin to the Coin of Bronze and Mixed Metal about to be Made and Issued by the Crown. August 13, 1859.

31. An Act to Amend the Law Relating to Probates and Letters of Administration in Ireland. August 13, 1859.

32. An Act to Amend the Law Concerning the Police in Counties and Boroughs in England and Wales. August 13, 1859

33. An Act to Confirm Certain Provisional Orders Made under the 14 and 15 Vic., c. 38, an Act to Facilitate Arrangements for the Relief of Turnpike Trusts. August 13, 1859.

34. An Act to Continue to January 1, 1861, the Powers of the Commissioners under 19 and 20 Vic., c 88, Concerning the University of Cambridge and the College of King Henry VI. at Eton. August 13, 1859.

35. An Act to Further Amend the Law of Property and to Relieve Trustees. August 13, 1859.

36. An Act to Alter the Stamp Duties Payable upon Probates of Wills and Letters of Administration, Graduating the Scale of Them to Property on and above £1,000,000; to Repeal the Stamp Duties on Licences to Exercise the Faculty of Physic; and to Amend the Laws Relating to Hawkers and Pedlars. August 13, 1859.

ACTS OF PARLIAMENT—(*Continued*).

37. An Act for the Amendment of the Laws Relating to the Customs. August 13, 1859.

38. An Act Further to Amend the Laws Relating to the Militia. August 13, 1859.

39. An Act to Enable the Secretary of State in Council of India to Raise Money in the United Kingdom for the Service of the Government of India. August 13, 1859.

40. An Act for the Establishment of a Reserve Volunteer Force of Seamen, and for the Government of the Same. August 13, 1859.

41. An Act to Amend the Act for the Better Government of India. August 13, 1859.

42 An Act to Provide for the Establishment of a Reserve Force of Men, not exceeding 20 000, who have been in her Majesty's or the East India Company's Service. August 13, 1859.

43. An Act to Amend and Extend the Provisions of the Acts for the Inclosure, Exchange, and Improvement of Land. August 13, 1859.

44. An Act to Continue till the 1st of October, 1862, and to the End of the then next Session of Parliament, the 3 and 4 Vic., c. 59, an Act for the Exemption of Stock in Trade from Rating.

45. An Act to Continue till the 1st of August, 1862, and to the End of the then next Session of Parliament, Certain Temporary Provisions concerning Ecclesiastical Jurisdiction in England. August 13, 1859.

46. An Act to Continue till the 1st of June, 1861, and to the End of the then next Session of Parliament, and to Amend, the 14 and 15 Vic., c. 104, an Act Concerning the Management of Episcopal and Capitular Estates in England. August 13, 1859.

47. An Act to Authorise the Inclosure of Certain Lands in Pursuance of a Special Report of the Inclosure Commissioners of England and Wales. August 13, 1859.

48. An Act to Continue till the 10th of August, 1860, the 17 and 18 Vic., c. 102, the Corrupt Practices Prevention Act. 1854. August 13, 1859.

49. An Act to Provide for the Payment of Debts Incurred by Boards of Guardians in Unions and Parishes, and Boards of Management in School Districts. August 13, 1859.

50. An Act Further to Continue till the 1st of July, 1860, the Exemption of Roman Catholic Charities from the Operation of the Charitable Trusts Acts. August 13. 1859.

51. An Act to Continue till the 1st of November, 1860, Certain Turnpike Acts in Great Britain. August 13, 1859.

52 An Act to Amend the Laws Relating to the Police District of Dublin Metropolis. August 13, 1859.

53. An Act to Enable Charitable and Provident Societies and Penny Savings Banks to Invest all their Proceeds in Savings Banks. August 13, 1859.

54. An Act to Defray the Charge of the Pay, Clothing, and Contingent and other Expenses of the Disembodied Militia in Great Britain and Ireland; to Grant Allowances in Certain Cases to Subaltern Officers, Adjutants, Paymasters, Quartermasters, Surgeons, Assistant Surgeons, and Surgeons' Mates of the Militia; and to Authorise the Employment of the Non-commissioned Officers. August 13, 1859.

55. An Act to Apply a Sum out of the Consolidated Fund and the Surplus of Ways and Means to the Service of the Year 1859, and to Appropriate the Supplies Granted in this Session of Parliament. August 13, 1859.

56. An Act to Amend the 5 and 6 Will. 4, c. 63, an Act Relating to Weights and Measures. August 13, 1859.

57. An Act Limiting the Power of Imprisonment for Small Debts Exercised by the County Court Judges to Cases where it shall Appear to the Satisfaction of the County Court Judge that Credit has been Obtained by Fraud, or the Debt has been Contracted without Reasonable Expectation of being Able to Pay. or that Property has been Transferred or Concealed with Intent to Defraud Creditors, or that the Debtor has Obtained, before or after Judgment, Sufficient Means to Pay the Debt, and Does not Do So. August 13, 1859.

58. An Act to Empower the Commissioners of Works and Public Buildings to Acquire Additional Space for the Western Approach to Westminster New Bridge. August 13, 1859.

59. An Act to Enable Railway Companies to Settle their Differences with other Companies by Arbitration. August 13, 1859.

60. An Act to Extend the Powers the 13 and 14 Vic., c. 3, an Act Relating to the Laying Down of Railways at Holyhead Harbour. August 13, 1859.

61. An Act to Make Further Provisions Concerning the Court for Divorce and Matrimonial Causes. August 13, 1859.

62. An Act to Amend the 20 and 21 Vic., c. 60, the Irish Bankruptcy and Insolvency Act, 1857. August 13, 1859.

63. An Act to Afford Facilities for the more Certain Ascertainment of the Law Administered in One Part of her Majesty's Dominions when Pleaded in the Courts of Another Part Thereof August 13, 1859.

64. An Act to Remove Doubts as to the Validity of Certain Marriages of British Subjects at Lisbon. August 13, 1859.

65. An Act for Amending the Acts for the Better Regulation of Divisions in the Several Counties of England and Wales. August 13, 1859.

66. An Act for Regulating Measures Used in Sales of Gas. August 13, 1859.

THE INCOME-TAX.—A return to the House of Lords, ordered on the motion of Lord Monteagle of Brandon, informs the public that the total amount of property assessed under the five schedules of the income-tax is £274,724,847 in England and Wales, and £29,553,899 in Scotland. In England £109,978,265 is assessed under schedule A, £42,777,237 under B £28,083,017 under C, £77,503,022 under D, and £16,383,306 under E. As regards schedule A, £42,684,577 is assessed under the head of land, £47,438,766 under messuages, £209,960 under tithes, £203,479 under manors, £218,363 under fines, £366,801 under quarries, £3,485,150 under mines, £1,219,531 under ironworks, £17,959 under fisheries, £802.765 under canals, £10,450,401 under railroads, £843,060 under gasworks, and £1,860,290 under other property. In Ireland last year £22,863,099 was assessed under all schedules, to wit—£12,826,739 under A, £2,804,248 under B, £1,432,354 under C, £4,788,017 under D, and £1,011,741 under E. The net amount of income-tax assessed under all the schedules in England and Wales for the year ended the 5th of April, 1858, was £6,682,999, and in Scotland £623,090. In England £2,965,528 was assessed under A, £383,595 under B, £819,08 under C, £2,064,444 under D, and £450,344 under schedule E.

REGULATIONS RESPECTING PASSPORTS.

APPLICATIONS for passports must be made in writing, and inclosed in a cover addressed to "Her Majesty's Secretary of State, Foreign Office, London," or to an Agent at one of the specified outports, with the word "Passport" conspicuously written on the cover.

Passports are issued at the Foreign Office, between the hours of eleven and four, on the day following that on which the application for the passport has been received at the Foreign Office; but the passport will be issued at the outports immediately on application, accompanied by the production of a certificate of identity, within such hours as may be fixed with regard to the convenience of persons desiring of embarking for the Continent.

The charge on the issue of a passport, whatever number of persons may be named in it, is 2s., which sum includes the stamp duty of 6d.

Foreign Office passports are granted only to British-born subjects or to citizens of the Ionian States, or to such Foreigners as have become naturalised either by Act of Parliament or by a certificate of naturalisation granted by the Secretary of State for the Home Department. When the party is a "naturalised British subject," he will be so designated in his passport; and, if his certificate of naturalisation be dated subsequently to the 24th of August, 1850, his passport will be marked as good for one year only; but this regulation will not preclude any person whom it affects from obtaining at any future period, on his producing his old passport, a fresh passport for a further period of one year, without being required to pay a fresh charge.

Passports are granted to all persons either known to the Secretary of State or recommended to him by some person who is known to him; or upon the application of any banking firm established in London or in any other part of the United Kingdom; or upon the production of a certificate of identity signed by any mayor, magistrate, justice of peace, minister of religion, physician, surgeon, solicitor, or notary in the United Kingdom.

A passport cannot be sent by the Foreign Office, or by an agent at an outport, to a person already abroad: such person should apply for one to the nearest British Mission or Consulate.

Foreign Office passports must be countersigned at the Mission in London, or at some Consulate in the United Kingdom, of the Government of the country which the bearer of the passport intends to visit.*

A Foreign Office passport granted to a British-born subject or to a citizen of the Ionian States, or to a "naturalised British subject" whose certificate of naturalisation is dated previously to August 24, 1850, is not limited in point of time, but is available for any time, or for any number of journeys to the Continent, if countersigned afresh by the Ministers or Consuls of the countries which the bearer intends to visit; but a passport granted to a "naturalised British subject" whose certificate is dated subsequently to the 24th of August, 1850, is only available for the period for which the passport was originally granted.

CONSULAR FEES TO BE PAID FOR EACH VISA.

Austria	Gratis.	Naples and Sicily ..	4s. 0d.
Baden	2s. 6d.	Peru	Porter 1s.
Bavaria (if not signed Consul, 2s. 6d.)	Gratis.	Portugal	Porter 1s.
Belgium	3s. 6d.	Russia	1s. 7d.
Brazil	Porter 1s.	Spain	Porter 1s.
Denmark	Gratis.	Sweden and Norway ..	Gratis.
France	4s. 3d.	Switzerland	5s. 6d.
Greece	2s. 6d.	Turkey	Porter 1s.
Holland	5s. 0d.	Tuscany	4s. 6d.
Mexico	4s. 6d.	Wurtemberg	4s. 0d.

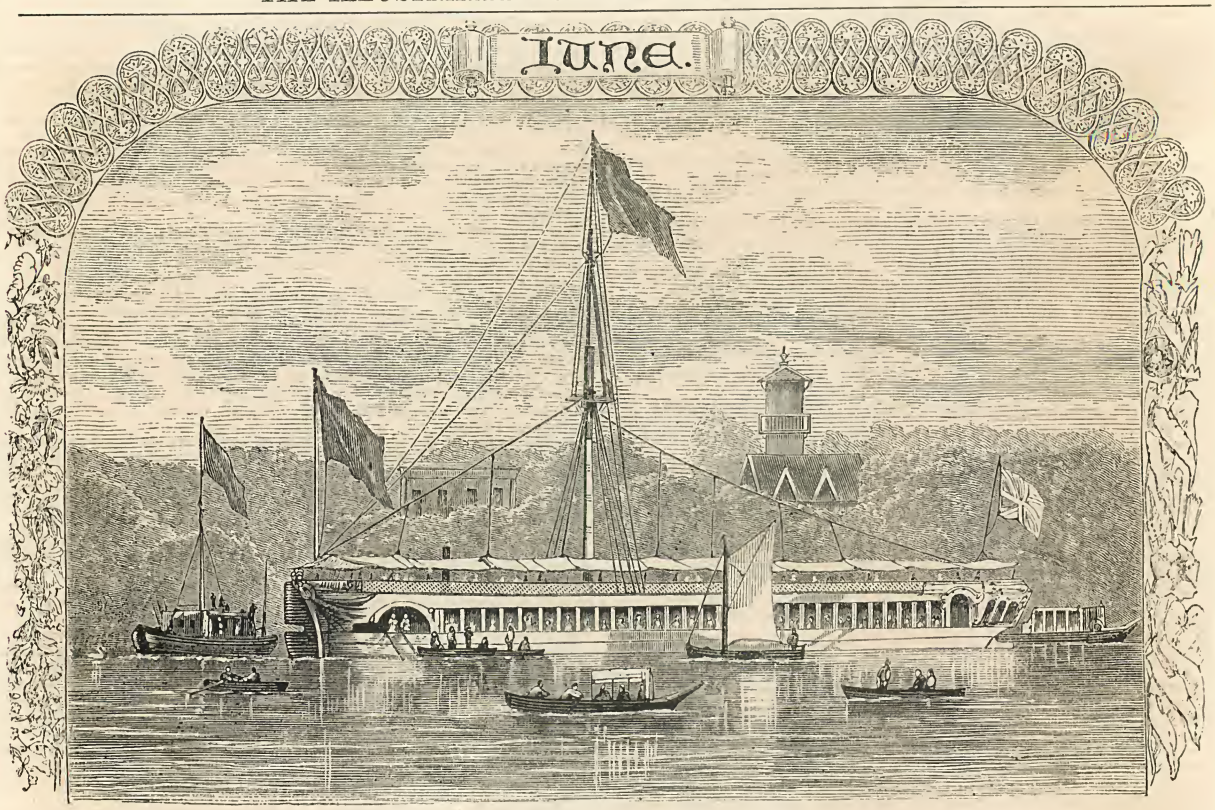
LIST OF THE PRINCIPAL OFFICES IN LONDON WHERE FOREIGN OFFICE PASSPORTS ARE TO BE VISED.

Austrian Legation	Chandos House, Chandos-street, Cavendish-square.
Bavarian Legation	3, Hill-street, Berkeley-square.
Belgian Consulate	53, Gracechurch-street.
French Consulate	36, King William-street, City.
Netherlands Consulate ..	20½, Great St. Helen's.
Portuguese Consula ..	5, Jeffreys-square, St. Mary Axe.
Russian Consulate	32, Great Winchester-street.
Sicilian Consulate	15, Cambridge-street, Edgware-road.
Spanish Legation	17, Hereford-street, Park-lane.
Turkish Embassy	1, Bryanston-square.

INFLUENCE OF FOODS.—Dr. Edward Smith, of the Hospital for Consumption, Brompton, considers the use of arrowroot and other fashionable foods (consisting merely of starch and water) in preference to the cereals (wheat, &c.) utterly indefensible, even in cases of exhaustion He draws the distinction between the action of that diet which increases the vital power, and that which merely tends to prevent the loss of it; and considers that beef-tea, wines, and brandy can act only in the latter mode, while the cereals act in the first-named manner. Milk and the cereals he asserts to be the most perfect form of food; and approves of the use of skimmed rather than of new milk in cases of fever. The great value of animal substances in diet, as increasing the respiratory process in addition to the supply of plastic material, is dwelt upon In cases of debility, with lessened appetite and a soft perspiring skin, Dr. Edwards recommends fat to be applied to the skin rather than taken internally. He approves of sugar and water (the French eau sucrée) as an innocuous and refreshing beverage, and thinks that the ill-effects of sugar on the healthy system have been greatly exaggerated.—Tea causes waste, and thus is injurious to persons underfed. It differs from coffee chiefly by increasing the action of the skin, and thereby tending to cool the body. Dr. Smith thinks that both tea and coffee ought to be more commonly used as medicinal agents. The latter he believes to be a valuable febrifuge, and one particularly fitted for cases of nervous excitability. He considers all alcohols to have their chief influence in sustaining the action of the heart.

* It is requisite that the bearer of every passport granted by the Foreign Office should sign his passport before he sends it to be visèd at any foreign Mission or Consulate in England; without such signature either the *visa* may be refused, or the validity of the passport questioned abroad. And travellers who may have any intention of visiting the Austrian States at any time in the course of their travels on the Continent are particularly and earnestly advised not to quit England without having their passport visèd at the Austrian Mission in London; but there is no necessity for the *visa* to a ...ign Office passport of either the Prussian or Sardinian authorities in the United Kingdom.

June.



CITY BARGE "MARIA WOOD" AT TWICKENHAM.

Day of Month	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Aftern.	MOON. Sets at London. Morn.	MOON. Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Docks. Morn.	HIGH WATER AT Liverpool Docks. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	F	*Nicomede*	3 50	11 57 34	8 5	6 8	10 18	1 51	12	11 53	—	9 0	9 27
2	S	No real night.	3 50	11 57 43	8 6	7 30	11 15	2 19	13	0 22	0 49	9 54	10 20
3	S	TRINITY SUND.	3 49	11 57 52	8 7	8 41	Morn.	2 55	○	1 16	1 42	10 45	11 8
4	M	King of Belgians elect., 1831	3 48	11 58 2	8 8	9 38	0 13	3 44	15	2 7	2 30	11 29	11 50
5	Tu	*Boniface*	3 48	11 58 13	8 10	10 21	1 11	4 46	16	2 51	3 12	—	0 12
6	W	Mutiny at Allahabad, 1857	3 47	11 58 23	8 11	10 51	2 5	5 55	17	3 34	3 55	0 33	0 53
7	Th	*Corpus Christi*	3 47	11 58 34	8 12	11 13	2 56	7 10	18	4 15	4 35	1 13	1 33
8	F	D. Jerrold died, 1857	3 46	11 58 45	8 13	11 31	3 43	8 24	19	4 55	5 15	1 53	2 14
9	S	Mutiny at the Nore, 1797	3 46	11 58 57	8 14	11 45	4 27	9 35	20	5 36	5 56	2 34	2 54
10	S	1ST S. aft. TRIN.	3 45	11 59 9	8 14	11 57	5 8	10 45	21	6 16	6 38	3 16	3 40
11	M	*St. Barnabas*	3 45	11 59 21	8 15	Morn.	5 48	11 53	☾	7 2	7 26	4 4	4 28
12	Tu	Trinity Term ends	3 45	11 59 33	8 15	0 10	6 27	Aftern.	23	7 50	8 17	4 55	5 25
13	W		3 44	11 59 45	8 16	0 23	7 8	2 11	24	8 47	9 17	5 55	6 25
14	Th	Battle of Marengo, 1800	3 44	11 59 58	8 16	0 37	7 51	3 24	25	9 47	10 17	6 55	7 25
15	F	Mutiny at Gwalior, 1857	3 44	12 0 11	8 17	0 53	8 36	4 37	26	10 47	11 18	7 56	8 26
16	S	Ary Scheffer died, 1858	3 44	12 0 24	8 17	1 16	9 26	5 52	27	11 48	—	8 53	9 17
17	S	2ND S. aft. TRIN.	3 44	12 0 37	8 18	1 46	10 20	7 5	28	0 15	0 39	9 41	10 4
18	M	Battle of Waterloo, 1815	3 44	12 0 50	8 18	2 29	11 18	8 9	29	1 3	1 26	10 26	10 48
19	Tu	Gwalior recaptured, 1858	3 44	12 1 3	8 18	3 26	Aftern.	9 1	●	1 48	2 10	11 10	11 31
20	W	Accession	3 44	12 1 16	8 18	4 38	1 17	9 40	1	2 32	2 53	11 53	—
21	Th	Proclamation	3 44	12 1 29	8 19	6 0	2 14	10 9	2	3 15	3 38	0 16	0 38
22	F	Income Tax com., 1842	3 45	12 1 42	8 19	7 26	3 9	10 31	3	4 0	4 23	1 1	1 23
23	S	Battle of Solferino, 1859	3 45	12 1 55	8 19	8 53	4 0	10 48	4	4 15	5 8	1 46	2 9
24	S	3RD S. aft. TRIN.	3 45	12 2 8	8 19	10 18	4 50	11 5	5	5 31	5 55	2 33	2 58
25	M	[*St. J. Bap.* Midsummer Day	3 46	12 2 21	8 19	11 42	5 38	11 19	6	6 20	6 46	3 24	3 51
26	Tu	Victoria Cross dist., 1857	3 46	12 2 33	8 19	Aftern.	6 27	11 37	☽	7 13	7 40	4 18	4 46
27	W	Massacre at Cawnpore, 1857	3 46	12 2 46	8 19	2 29	7 18	11 55	8	8 8	8 40	5 18	5 52
28	Th	Queen Victoria crowned, 1838	3 47	12 2 58	8 18	3 53	8 11	Morn.	9	9 14	9 48	6 26	7 0
29	F	*St. Peter*	3 47	12 3 10	8 18	5 14	9 6	0 20	10	10 22	10 58	7 36	8 12
30	S	Militia Bill passed, 1852	3 48	12 3 22	8 18	6 28	10 3	0 51	11	11 34	—	8 45	9 16

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	3 31 M	11 31 M	7 33 A
	6	3 39	11 57	8 17
	11	3 56	0 25 A	8 55
	16	4 20	0 51	9 22
	21	4 48	1 14	9 40
	26	5 18	1 32	9 44
Venus.	1	6 45	3 5	11 24
	6	6 46	2 59	11 11
	11	6 45	2 51	10 56
	16	6 43	2 40	10 36
	21	6 37	2 26	10 14
	26	6 25	2 8	9 50
Mars.	1	11 32 A	3 27 M	7 19 M
	6	11 17	3 11	7 2
	11	11 1	2 54	6 43
	16	10 45	2 35	6 23
	21	10 32	2 16	6 0
	26	10 10	1 55	5 35
Jupiter.	1	7 0 M	3 4 A	11 8 A
	6	6 45	2 48	10 51
	11	6 31	2 33	10 35
	16	6 17	2 17	10 17
	21	6 3	2 2	10 1
	26	5 50	1 47	9 44
Saturn.	1	9 26	4 53	0 23 M
	6	9 7	4 34	0 5
	11	8 50	4 16	11 42 A
	16	8 33	3 58	11 23
	21	8 17	3 41	11 5
	26	8 0	3 23	10 46
Uranus.	1	3 41	11 45 M	7 49
	6	3 22	11 26	7 30
	11	3 3	11 8	7 13
	16	2 44	10 49	6 54
	21	2 26	10 31	6 36
	26	2 7	10 12	6 17

"HOME OF THE MOUNTAINEER." PAINTED BY F. WYBURD.—FROM "THE ILLUSTRATED LONDON NEWS."

BRITISH INSECTS AND BUTTERFLIES.

MAY AND JUNE.

MAY, tremulous at its incoming, is now in the fulness of its beauty, and Nature seems endued with new life: the year has renewed its youth.

The river rolls placidly at our feet with a gentle ripple; there floats the whorled *Planorbis*, the little *Physa*, and the *Limnæa*; while the limpet-like *Ancylus* adheres to masses of stone in some sequestered nook; and there expand, over a bed of broad wet-repelling leaves, the flowers of the white and the yellow water-lily.

See in that still corner what a host of merry whirlwigs (*Gyrinus natator*) weave their mazy dance on the tranquil surface! There are two water-bugs (*Gerris lacustris* and *Hydrometra stagnorum*) as active as the whirlwigs, and the shining little *Hydrophilus* goes round and round in the enjoyment of life. The water-boatman (*Notonecta*), floating with his back downwards, and stretching out his two long oars, timidly shows himself; and so does the great water-beetle (*Dytiscus*); but the water-scorpion (*Nepa*) lurks cautiously in the mud.

But what are these that cover masses of jutting stone, posts, and palings with their myriads? Clouds of them are floating in the air, and thousands fall into the water. Hark to the plunge of the trout as he leaps to seize them; mark the concentric rings he has made by his vigorous effort! These are the mayflies (ephemeræ), well known to the fisherman. These insects live only for a few hours, or at most for a day. They deposit their eggs, and perish; but as aquatic larvæ they have enjoyed a year or two of existence, and were then voracious enough. Now, winged and mouthless, they eat nothing. One purpose only has to be accomplished, and their existence closes. Occasionally the number of these three-tailed mayflies exceeds conception. We have ourselves seen them literally fill the air.

Besides ephemeræ, numerous are the gauze-winged phryganeæ which hover over the water, and these also sometimes occur in numbers as astonishing as do the ephemeræ. The aquatic larvæ of the phryganeæ are known to the fisherman as caddis-worms; those of the ephemera being called bankbait. The caddis-worms make for themselves curious habitations, which snaillike they drag about with them as they crawl along the sandy bottom of streams or rivers. These habitations are tubular, so as to fit the body of the larva; and each species has its own selection in the choice of materials. Some glue particles of wood together, intermixed with gravel, and thus make a rough case; some use portions of the slender stems of rushes, and form a fluted cylinder; some agglutinate grains and sand together, and form a smooth and sightly domicile; others avail themselves of fragments of river-shells, intermixed with small pebbles, making a fanciful grotto-like tenement, smothly lined with silk. In clear shallow water these larvæ may be observed with the head and thorax protruded, crawling about in quest of food. We have seen numbers surround a crushed snail, purposely thrown in amongst them, and commence with eagerness to devour it. These caddis-worms are very careful as to the adjustment of the specific gravity of their case; it must not incumber them, but it must be submerged. Often, therefore, are alterations made, and with that precision which is the result of unerring instinct.

May is merging into June. It was on a fine warm day early in June that, while wandering along the banks of the Thames between Reading and Sunning, we were gratified by a spectacle not often witnessed. Hundreds of the great dragonfly were darting to and fro on quivering wings; while on the tall grass-stems along the water's edge and on the upper portion of semi-aquatic plants hundreds, nay, we might say thousands, of the pupæ of these fierce insects were resting—some just bursting the pupa case, some struggling to free themselves, others waiting till the crumpled wings expanded and the energy of life returned. The dragonfly, hovering over the water, commits her eggs to the fluid element, of which the larvæ are destined for so long a time to be inhabitants, fierce marauders then, as they will hereafter be in the air.

The larva of the dragonfly has six legs, and prowls about the stems of aquatic plants in search of prey. But it has another mode of progression in the water, which is not a little curious. Five leaflike appendages terminate the body; at the base of these is a cavity with muscular walls, and into this the larva during its aquatic progress perpetually takes a certain quantity of water, and instantaneously rejects it with considerable force, thus propelling itself along by a series of jerks. It is on the same principle (the force being continuous) that a rocket rises in the air, and attempts, we believe, have been made to apply this mode of propulsion to ships or boats by means of steam and machinery; but Art often fails to imitate the mechanism of Nature.

Bankbait, caddis-worms, the eggs and the minute fry of minnows, not excluding very young tadpoles, constitute the food of this voracious larva, and well is it provided with instruments for the seizure of its victims. The anterior part of the head is covered with a horny mask or visor in three pieces, which are capable of being opened (displaying edges armed with teeth) and of closing and securing the prey, which is thence conveyed to the true mouth. Thus furnished, the larva creeps upon its prey, as a cat upon a bird, and then seizes it by a sudden evolution. The pupa differs little from the larva, except in displaying the incased rudiments of the wings. About to undergo its final transformation, it ascends a plant or stem of grass, and there clings firmly by means of its legs. Soon the case, or indurated skin, splits down the back, and the imprisoned dragonfly slowly extricates itself, drawing its legs out of those of the pupa, as a man draws his feet out of topboots; thus it emerges, leaving its case, prehensile mask, and all, still adhering to the grass stalk. As yet the wings are soft and crumpled up, but in less than an hour they become expanded, the nervures harden, they are vibrated, as if by way of trying their strength, and then up soars the perfect insect, rejoicing in air and sunshine—an insect falcon.

Many other insects are aquatic during their incomplete stages—such, for example, are the *Culicidæ* or *Tipulidæ*, commonly called gnats. One species belonging to the latter group (*Tipula* or *Chironomus plumosus*) is often found in abundance in large rain-water tubs: we mean in its larva state. These larvæ are little red wriggling creatures, ever and anon ascending and descending—a restless multitude. We have said that some of the phryganea undergo their transformation on the surface of the water: so do the larvæ of these gnats, their exuviation forming a tiny boat, from which the perfect insect rises with unwet wings.

To the hive-bee we shall hereafter allude. We have already introduced the humble-bee; but there are many other species of bee indigenous in our island the habits of which are well deserving attention. There are many bees which are solitary in their habits, that is, they do not form communities, and among them are carpenters, which work their mines into the soft or semi-decomposed wood of posts and palings. There are others which are called masons, because they bore into soft old brickwork, or rather into the lime between the bricks. Now, it so happens that our garden wall presents us with the pits or nests of a species of mason-bee in considerable numbers (*Megachile*). We have watched its labours, and, did space permit us, we might enter into some interesting details.

The walls of our garden present us also with another mason, not a bee, but a wasp. It is in the accidental crack or rugged cranny of the brick itself that this wasp (*Odynerus*) constructs a nidus for its progeny. Most probably it modifies this cranny, working at the substance of the brick itself by means of its powerful jaws. The receptacle being complete, it is lined with a thin coating of clay or mud, worked up into plaster: and over this, inclosing a shaft, is an outer wall of the same material, as nearly level as may be with the surface of the brick, and sharp must the eye be to detect the work of the cunning architect. Space forbids any extensive comments; nor can we do more than say that, both of bees and wasps, there are workers in wood (carpenters), the general habits of which, except that the material upon which they operate is more easily chiselled than brick, mortar, or a stiff bed of indurated or compact sandstone, are in the main not very dissimilar, allowance being made for species.

It is June. How within our limited space can we comment upon the crowd of insects which now teem around us? Glossy beetles, and other forms to which naturalists give the title of *Coleoptera*, *Lepidoptera*, *Neuroptera*, *Hemiptera*, *Diptera*, &c., force themselves upon our notice, Who can recount their numbers? Then there are moths with plumage so chaste, so delicately pencilled, as to put the powers of the artist to their utmost stretch.

Butterflies are everywhere around us, hovering over mead and garden on fanlike wings. They are the creatures of light and sunshine, feeding on the nectar of flowers. Yet were they once mere grovellers upon earth, the voracious destroyers of the vegetable produce of the garden, noxious crawlers, greedy devourers. They were then in their caterpillar state, and furnished with horny jaws well adapted for the mastication of coarse herbage, even the leaves of the nettle and thistle; but these jaws have now disappeared, a delicate tubular proboscis, wound round upon itself when not in use, is given in exchange, and through this is drawn up the nectar of opening flowers. What a change of diet—from cabbage and nettle leaves to luscious nectar! But how great has been the metamorphosis altogether! Look at the caterpillar—it is the product of an egg. At first it is small, but even then "a huge feeder;" it soon moults its skin, and increases in bulk, a new integument being formed. In a short time it again casts off its skin, a new cuticle supplying the shrivelled exuviation, and this with increase of size. The change is effected as follows:—Beneath the original skin or cuticle a new one begins to be formed, and the caterpillar also begins to swell, rending open the old integument along the dorsal line. A few struggles suffice to complete the extrication, and the caterpillar emerges, enlarged in size and brighter in colouring. At the moulting time the caterpillar is dull and sluggish, and refuses food; but as soon as the change is accomplished it recovers its appetite, accumulating internally a load of fat to serve as a supply to the pupa, for such it will soon become, which is constrained to fast. Thus do several moultings take place, until at length the caterpillar prepares for its change. Beneath the last skin the vital energies of the system have developed wings, as yet crumpled up, antennæ, a long slender proboscis, and limbs—in fact, all the organisation of a perfect butterfly or moth. But this last skin has to be cast off, and exchanged for a pupa-case, the mummy-like cerement of the developing insect, and from which it will in due time, according to its species, burst forth. Some caterpillars undergo their final metamorphosis buried in the earth, often surrounded by a cocoon of silk; some in decayed timber; others surrounded by an exterior tissue of silken threads, envcloping an interior cocoon; others again, unprotected in the pupa state, hang suspended by the tail from walls and palings. The *modus operandi* by which a pendent caterpillar attaches itself by its tail to the wall is as follows:—Its position being assumed, the hinder limbs acting as graspers, and its last skin being ready for throwing off, it contorts the body, and repeatedly brings up the head to the tail, in order to spin a short but secure caudal fastening, composed of a number of silken filaments. This done, it hangs down fairly suspended. After a brief pause it again writhes itself, and jerks the whole frame, insomuch that the dried and now easily detached skin is thrown completely off, and the contracted caterpillar in its clean pupa case—head, antennæ, wings, and limbs being plainly discernible—hangs moored to the chosen point of affixation. It has now only to wait the final change, which completes the progressive series of development. Such, then, is an outline of the progress of the butterfly from the egg to its perfect condition, from

> the worm, a thing that crept
> On the bare earth, then wrought a tomb and slept,

to the aerial Psyche.

Let it not be supposed that in other metabolous insects the change is not as great as in the example cited. Look at the difference between the frail Ephemera and the bankbait, the gauze-winged Phryganea and the caddis-worm, the Culex and its wriggling larva; nay, these are aquatic in their habits, and have to exchange that medium for the atmospheric air—which is not the case with the larva of moth or butterfly. Look, again, at beetles, flies, bees, &c. Here we might enlarge, but space forbids.

The butterflies which, as emblematic of this month, we have figured are:—1. The Admiral Red (*Vanessa Atalanta*), which appears on the wing from June to the end of September. Many of our butterflies, which result from successive hatches (and among them the present species), appear even as late as October, and of these many individuals survive the winter, hybernating in some sheltered spot, some nook or cranny, which protects their tender frame—caterpillar feeds on the nettle. 2. The small Tortoiseshell (*Vanessa urticæ*), an elegant but common species, appearing from March to September. It abounds in the south of Europe, and may be seen in Italy on the alert during the winter. In our island it hybernates—caterpillar feeds on the nettle. 3. The Peacock Butterfly (*Vanessa io*), a most elegant species—*Omnium regina* of Ray. Is rare in Scotland, and, indeed, is far less abundant in our northern than our southern counties—caterpillar feeds on the nettle. 4. The Orange-tip Butterfly (*Pontia cardamines*). This delicately-painted butterfly, of which the female far excels the male in beauty, and has been called the Lady of the Woods, is common in some districts during the whole summer—caterpillar feeds on various cruciferous plants, especially *Cardamines*; also on the *Brassica campestris*, and some other species.

June is drawing to a close. The longest day of the year has passed; the longest night has yet to come. July opens upon us.

THE CHILDREN OF GATHORNE HARDY, ESQ., M.P., MEASURING THEIR HEIGHT WITH A BRANCH OF FOXGLOVE.

FROM "THE ILLUSTRATED LONDON NEWS."

A. MUNRO, who has so often pleased us with his groups of children—so tender in form, so graceful in sentiment, though sometimes in the slightest degree tinged with effeminacy—has produced a very striking portrait-group, which we have great pleasure in Engraving, representing "Edith and Emily, the Children of Gathorne Hardy, Esq., M.P., Measuring their Height with a Branch of Foxglove," which forms an ingeniously contrived ornament, crowning the figures. The two sisters, attired in easy flowing drapery, embrace each other with affection; and whilst the younger one looks up with interest to see the measurement, the elder, pressing her hand, looks into her face with a charming expression of tenderness.

The figures, which are modelled with all the graceful slimness of youth, display an elegant elasticity in the action; the workmanship throughout, particularly in the features, in the crisp wavy tresses, and the light flowing drapery, is commendable in the extreme.

DESTRUCTIVE ACTION OF OXIDES OF IRON ON SHIPS.—M. Kuhlmann, at a meeting of the Paris Academy of Sciences, recently drew attention to the decay of the wood of ships in the places adjoining iron nails and pegs; while no such decay took place where wooden or copper pegs were employed. His observations were made on ships at Dunkirk. He has since endeavoured to explain these facts; and, for this purpose, has made many experiments relating to the action of sesquioxide of iron on various vegetable products. The results of these experiments appear to him conclusive that the sesquioxide of iron brings the oxygen of the atmosphere into contact with the organic matter of the wood, and thus hastens its destruction. The oxide becomes thus in some degree a kind of reservoir of oxygen, filling itself at the expense of the air, and emptying itself to support the combustion of combustible bodies. To avoid this injury to the wood of the ships the nails, &c., should be either coated with zinc or made of copper.

JULY.

FISHING.

Day of Month.	Day of Week.	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Aftern.	MOON. Sets at London. Morn.	MOON. Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Dock. Morn.	HIGH WATER AT Liverpool Dock. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	Days	H. M.	H. M.	H. M.	H. M.
1	☾	4TH S. aft. TRIN	3 49	12 3 33	8 18	7 29	11 0	1 36	12	0 7	0 38	9 44	10 10
2	M	Visita. B.V.Mary	3 50	12 3 44	8 17	8 17	11 56	2 32	13	1 6	1 32	10 35	10 57
3	Tu	Cambridge Commencement and Oxford Act	3 50	12 3 55	8 17	8 51	Morn.	3 39	○	1 57	2 19	11 19	11 41
4	W	*Trans. St. Martin*	3 51	12 4 6	8 17	9 17	0 48	4 52	15	2 41	3 3	—	0 2
5	Th	Jerusalem taken, 1100	3 52	12 4 16	8 16	9 36	1 36	6 6	16	3 24	3 43	0 21	0 40
6	F	Cambridge Easter Term ends	3 53	12 4 27	8 16	9 51	2 22	7 19	17	4 2	4 19	0 57	1 14
7	S	Oxford Trinity Term ends	3 54	12 4 36	8 15	10 4	3 4	8 29	18	4 36	4 54	1 32	1 49
8	☽	5TH S. aft. TRIN.	3 55	12 4 46	8 14	10 16	3 44	9 39	19	5 11	5 28	2 6	2 24
9	M	Fire Insurance due	3 56	12 4 54	8 14	10 28	4 24	10 46	20	5 46	6 3	2 41	3 0
10	Tu		3 57	12 5 3	8 13	10 41	5 3	11 54	21	6 22	6 41	3 19	3 39
11	W	Royal Victoria Asylum commenced, 1857	3 58	12 5 11	8 12	10 58	5 45	Aftern.	☾	7 1	7 22	4 0	4 22
12	Th	Peace between France and Austria concluded, 1859	3 59	12 5 19	8 11	11 17	6 28	2 18	23	7 44	8 9	4 47	5 18
13	F	Sir Colin Campbell leaves for India, 1857	4 0	12 5 26	8 10	11 43	7 15	3 32	24	8 40	9 14	5 52	6 26
14	S	Bastille destroyed, 1789	4 1	12 5 33	8 9	Morn.	8 7	4 45	25	9 48	10 22	7 0	7 35
15	☽	6TH S. aft. TRIN.	4 2	12 5 39	8 8	0 18	9 2	5 53	26	10 57	11 34	8 12	8 46
16	M	Beranger died, 1857	4 3	12 5 45	8 7	1 9	10 1	6 50	27	—	0 8	9 15	9 42
17	Tu		4 5	12 5 50	8 6	2 15	11 1	7 36	28	0 37	1 4	10 9	10 34
18	W	Mutiny at Hyderabad, 1857	4 6	12 5 55	8 5	3 34	Aftern.	8 10	●	1 31	1 56	10 57	11 20
19	Th	Princess Augusta born, 1822	4 7	12 5 59	8 4	5 1	0 58	8 34	1	2 19	2 42	11 43	—
20	F	*Margaret*	4 8	12 6 3	8 3	6 31	1 52	8 54	2	3 5	3 27	0 5	0 27
21	S	Burns died, 1796	4 10	12 6 6	8 2	7 59	2 44	9 10	3	3 49	4 11	0 49	1 11
22	☽	7TH S. aft. TRIN.	4 11	12 6 9	8 0	9 25	3 34	9 27	4	4 33	4 55	1 33	1 55
23	M	[*M. Magdalene*	4 12	12 6 11	7 59	10 51	4 24	9 43	5	5 17	5 38	2 16	2 38
24	Tu		4 14	12 6 12	7 58	Aftern.	5 15	10 1	6	6 0	6 23	3 1	3 24
25	W	*St. James*	4 15	12 6 13	7 56	1 40	6 7	10 24	☽	6 46	7 11	3 49	4 15
26	Th	*St. Anne*	4 17	12 6 13	7 55	3 2	7 2	10 53	8	7 37	8 6	4 44	5 17
27	F	French Revolution com., 1830	4 18	12 6 13	7 53	4 19	7 58	11 33	9	8 39	9 17	5 55	6 35
28	S	Canadian Parliament dissolved, 1858	4 19	12 6 12	7 52	5 24	8 54	Morn.	10	9 57	10 38	7 16	7 58
29	☽	8TH S. aft. TRIN.	4 20	12 6 10	7 50	6 15	9 49	0 24	11	11 20	11 59	8 37	9 11
30	M	Capt. Cook's first voyage, 1768	4 22	12 6 8	7 49	6 53	10 42	1 26	12	—	0 33	9 39	10 5
31	Tu	Pease, "Father of Railways" died, 1858	4 24	12 6 5	7 47	7 21	11 31	2 37	13	1 1	1 27	10 29	10 51

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	5 45 M	1 45 M	9 42 M
	6	6 9	1 52	9 33
	11	6 26	1 55	9 22
	16	6 38	1 52	9 5
	21	6 40	1 42	8 43
	26	6 32	1 26	8 20
Venus.	1	6 9	1 46 A	9 23 A
	6	5 48	1 20	8 52
	11	5 22	0 50	8 18
	16	4 53	0 18	7 43
	21	4 24	11 46 M	7 8
	26	3 53	11 14	6 35
Mars.	1	9 51 A	1 32	5 9 M
	6	9 31	1 9	4 42
	11	9 10	0 44	4 13
	16	8 49	0 19	3 44
	21	8 27	11 48 A	3 14
	26	8 4	11 23	2 46
Jupiter.	1	5 35 M	1 31	9 27 A
	6	5 21	1 16	9 11
	11	5 9	1 1	8 53
	16	4 55	0 46	8 37
	21	4 42	0 31	8 20
	26	4 28	0 16	8 4
Saturn.	1	7 43	3 5	10 27
	6	7 26	2 47	10 8
	11	7 10	2 30	9 50
	16	6 53	2 12	9 31
	21	6 37	1 55	9 13
	26	6 22	1 38	8 54
Uranus.	1	1 48	9 54 M	6 0
	6	1 35	9 35	5 35
	11	1 17	9 17	5 17
	16	0 58	8 58	4 58
	21	0 39	8 39	4 39
	26	0 21	8 21	4 21

"RIVER SCENE—WALES. SALMON FISHING: ASCERTAINING THE WEIGHT." BY A. F. ROLFE.—FROM "THE ILLUSTRATED LONDON NEWS."

THE combination of rural scenery with incidents of rustic and sporting life is one of the most agreeable applications of the landscape art, and one which will always be popular in this country. Mr. Rolfe shows a happy aptitude for this description of painting in his several contributions to the Exhibition of the Institution of the Fine Arts, some of which he has produced in partnership with J. F. Herring, the celebrated animal-painter. The "River Scene in North Wales," with a party of salmon fishers snatching a few minutes' siesta in the middle of the day, and taking the opportunity to weigh their spoil, is an effective subject, and one peculiarly appropriate to the season of the year. The scene is bold and picturesque: a noble tortuous valley forms the bed of a rapid salmon-stream, which breaks into a bubbling fall at the sharp turn of rock upon which the sportsmen are reposing. Above is a glorious sky, clear, but not too sultry, such as tourists, and anglers especially, most delight in. The picture is one which all sportsmen and lovers of nature will admire and appreciate; and, in an artistic point of view, is most satisfactory in every detail.

STAMP AND OTHER GOVERNMENT DUTIES.

RECEIPTS.

For £2 and upwards .. .. One Penny.
N.B. Persons receiving the money are to pay the duty.

Receipts may be stamped within fourteen days of date on payment of £5, or within one month on payment of £10 penalty: after that time they cannot be stamped.

Adhesive stamps of One Penny may be used for receipts, or drafts, or orders on demand, without regard to their special appropriation—i.e., one will do for the other, and *vice versâ*.

Receipts for money paid to Crown exempt from Stamp-duty. No exemption for letters acknowledging receipt of Bills or Money Securities.

AGREEMENTS (Not under Seal).

Of the value of £20 or upwards .. .. 2s. 6d.
If the agreement contains 2160 words, or upwards, then for every quantity of 1080 words over the first 1080 a further progressive duty of .. .. 2s. 6d.

Exemptions.—Letters containing any agreement in respect of merchandise, by post, between merchants or traders in Great Britain or Ireland, residing and actually being, at the time, at the distance of fifty miles from each other; agreements relating to sale of goods; to hire of labourers, servants, and seamen; and to rack-rent leases under £5 per annum.

Agreements may be stamped within fourteen days after date without penalty, and at any time after fourteen days on payment of £10 penalty.

LEASES AND CONVEYANCES.

Lease or Tack of any lands, tenements, hereditaments, or heritable subjects, at a yearly rent, for less than thirty-five years, or less than a year, without any sum of money by way of fine, premium, or grassum paid for the same:—

Yearly rent not exceeding £5 ..	0 6	Exceed. £25 and not exe. £50 ..	5 0
Exceed. £5 and not exe. £10 ..	1 0	,, 50 ,, 75 ..	7 6
,, 10 ,, 15 ..	1 6	,, 75 ,, 100 ..	10 0
,, 15 ,, 20 ..	2 0	,, 100, then for every £50	
,, 20 ,, 25 ..	2 6	or any fractional part of £50 ..	5 0

Lease or Tack of any lands, tenements, hereditaments, or heritable subjects, for any term of years exceeding thirty-five, at a yearly rent, with or without any sum of money by way of fine, premium, or grassum.

	Term not exceeding 100 Years.			Term exceeding 100 Years.		
	£	s.	d.	£	s.	d.
Where yearly rent not exceeding £5	0	3	0	0	6	0
And where exceeding £5 and not exceeding £10 ..	0	6	0	0	12	0
,, 10 ,, 15 ..	0	9	0	0	18	0
,, 15 ,, 20 ..	0	12	0	1	4	0
,, 20 ,, 25 ..	0	15	0	1	10	0
,, 25 ,, 50 ..	1	10	0	3	0	0
,, 50 ,, 75 ..	2	5	0	4	10	0
,, 75 ,, 100 ..	3	0	0	6	0	0
Same exceeding £100, then for every £50, and also for any fractional part of £50	1	10	0	3	0	0

And where any such Lease or Tack as aforesaid shall be granted in consideration of a Fine, Premium, or Grassum, and also of a yearly Rent, such Lease or Tack shall be chargeable also, in respect of such Fine, Premium, or Grassum, with the *ad valorem* Stamp or Conveyances, pursuant to the 13th and 14th Vict., c. 97; see below.

Exemption.—Any Lease under the Trinity College (Dublin) Leasing and Perpetuity Act, 1851.

Conveyance of any kind or description whatsoever in England or Ireland, and Charter, Disposition, or Contract containing the first original Constitution of Feu and Ground Annual Rights in Scotland (not being a Lease or Tack for Years), in consideration of an annual sum payable in perpetuity or for any indefinite period, whether Fee Farm or other Rent, Feu Duty, Ground Annual, or otherwise .. .. — The same Duties as on a Lease or Tack for a Term exceeding 100 Years, at a yearly Rent equal to such annual sum

Exemptions.—Any Lease for Lives not exceeding Three, or for a Term of Years determinable with Lives not exceeding Three, by whomsoever granted. Any Grant in Fee Simple or in Perpetuity made in Ireland under the Renewable Leasehold Conversion Act, or of the Trinity College (Dublin) Leasing and Perpetuity Act, 1851. All which said Leases or Tacks and Grants respectively shall be chargeable with the Stamp Duties to which the same were subject and liable before the passing of the Act 16th and 17th Vict., c. 63.

Duplicate or Counterpart are chargeable with Progressive Duty, as under the 13th and 14th Vict., c. 97.

Licence to Demise Copyhold Lands, Tenements, or Hereditaments, or the Memorandum thereof, if granted out of Court, and the Copy of Court Roll of any such Licence, if granted in Court:—

Where the clear yearly value of the Estate to be demised shall be expressed in such Licence, and shall not exceed £75 .. .. — The same Duty as on a Lease at a yearly Rent equal to such yearly Value, under the Act of the 13th and 14th Vict., c. 97.

And in all other cases, 10s.

Conveyance (pursuant to 13th and 14th Vict., c. 97):—

Purchase or consideration money expressed:	£	s.	d.	Exe. £200 and not exe. £225 ..	1	2	6
Not exceeding £25	0	2	6	,, 225 ,, 250 ..	1	5	0
Exe. £25 and not exe. £50 ..	0	5	0	,, 250 ,, 275 ..	1	7	6
,, 50 ,, 75 ..	0	7	6	,, 275 ,, 300 ..	1	10	0
,, 75 ,, 100 ..	0	10	0	,, 300 ,, 350 ..	1	15	0
,, 100 ,, 125 ..	0	12	6	,, 350 ,, 400 ..	2	0	0
,, 125 ,, 150 ..	0	15	0	,, 400 ,, 450 ..	2	5	0
,, 150 ,, 175 ..	0	17	6	,, 450 ,, 500 ..	2	10	0
,, 175 ,, 200 ..	1	0	0	,, 500 ,, 550 ..	2	15	0
				,, 550 ,, 600 ..	3	0	0

BILLS OF EXCHANGE, PROMISSORY NOTES, &c.

Inland Bill of Exchange, Draft, or Order for Payment to the Bearer, or to Order, at any time otherwise than on Demand, of any sum of money:—

	£	s.	d.
Not exceeding £5	0	0	1
Exc. £5 and not exc. £10 ..	0	0	2
,, 10 ,, 25 ..	0	0	3
,, 25 ,, 50 ..	0	0	6
,, 50 ,, 75 ..	0	0	9
,, 75 ,, 100 ..	0	1	0
,, 100 ,, 200 ..	0	2	0
,, 200 ,, 300 ..	0	3	0
,, 300 ,, 400 ..	0	4	0
,, 400 ,, 500 ..	0	5	0
,, 500 ,, 750 ..	0	7	6
,, 750 ,, 1000 ..	0	10	0
,, 1000 ,, 1500 ..	0	15	0
,, 1500 ,, 2000 ..	1	0	0
,, 2000 ,, 3000 ..	1	10	0
,, 3000 ,, 4000 ..	2	0	0
,, 4000	2	5	0

Foreign Bill of Exchange drawn in, but payable out of, the United Kingdom—if drawn singly, or otherwise than in a set of three or more—the same duty as on an Inland Bill of the same amount and tenor. If drawn in sets of three or more, for every bill of each set where the sum payable thereby shall

	s.	d.
Not exceed £25	0	1
Above £25 and not exe. £50 ..	0	2
,, 50 ,, 75 ..	0	3
,, 75 ,, 100 ..	0	4
,, 100 ,, 200 ..	0	8
,, 200 ,, 300 ..	1	0
,, 300 ,, 400 ..	1	4
,, 400 ,, 500 ..	1	8
,, 500 ,, 750 ..	2	6
,, 750 ,, 1000 ..	3	4
,, 1000 ,, 1500 ..	5	0
,, 1500 ,, 2000 ..	6	8
,, 2000 ,, 3000 ..	10	0
,, 3000 ,, 4000 ..	13	4
,, 4000	15	0

Foreign Bill of Exchange drawn out of, and payable within, the United Kingdom, same duty as on Inland Bill of the same amount and tenor.

Foreign Bill of Exchange drawn out of, and payable out of, the United Kingdom, but endorsed or negotiated within the United Kingdom, same duty as on Foreign Bill drawn within the United Kingdom, and payable out of the United Kingdom.

Duty on Foreign Bills drawn out of the United Kingdom to be denoted by adhesive Stamps.

Promissory Note for the Payment in any other manner than to the Bearer on Demand of any sum of money:—

	s.	d.
Not exceeding £5	0	1
Above £5 and not exe. £10 ..	0	2
,, 10 ,, 25 ..	0	3
,, 25 ,, 50 ..	0	6
,, 50 ,, 75 ..	0	9
,, 75 ,, 100 ..	1	0

Promissory Note for the payment, either to the Bearer on Demand, or in any other manner than to the Bearer on Demand, of any sum of money:—

	£	s.	d.
Exe. £100 and not exe. £200 ..	0	2	0
,, 200 ,, 300 ..	0	3	0
,, 300 ,, 400 ..	0	4	0
,, 400 ,, 500 ..	0	5	0
,, 500 ,, 750 ..	0	7	0
,, 750 ,, 1000 ..	0	10	0
,, 1000 ,, 1500 ..	0	15	0
,, 1500 ,, 2000 ..	1	0	0
,, 2000 ,, 3000 ..	1	10	0
,, 3000 ,, 4000 ..	2	0	0
,, 4000	2	5	0

APPRENTICES' INDENTURES, AND ASSIGNMENTS OF THEM.

	£	s.	d.
Where no money is paid ..	0	2	6
Under £30	1	0	0
For £30 and under £50 ..	2	0	0
,, 50 ,, 100 ..	3	0	0
,, 100 ,, 200 ..	6	0	0
,, 200 ,, 300 ..	12	0	0
,, 300 ,, 400 ..	20	0	0
,, 400 ,, 500 ..	25	0	0
,, 500 ,, 600 ..	30	0	0
,, 600 ,, 800 ..	40	0	0
,, 800 ,, 1000 ..	50	0	0
,, 1000 and upwards ..	60	0	0

Contracts to serve as Artificers, Servants, Clerks, Mechanics, or Labourers, in the British Colonies are exempted from Stamp-duty.

PROTESTS.

	s.	d.
Bill or Note:—		
For £20 and under £100 ..	3	0
,, 100 ,, 500 ..	5	0
,, 500 or upwards	10	0
Of any other kind	5	0
Bills of Lading (which cannot be stamped after execution)	0	6
Charterparty	5	0

(Charterparty may be stamped within fourteen days after execution free of penalty; within one month, £10 penalty; after one month, cannot be stamped.)

CHEQUES, DRAFTS, OR ORDERS ON DEMAND.

All Drafts, Warrants, or Orders for the payment of money, are chargeable with a Stamp-duty of one penny, by using an adhesive receipt stamp, which must be cancelled by the person drawing the cheque, draft, or order, by writing his name on the stamp.

NEWSPAPERS.

By the 16th and 17th Vict., c. 63, s. 2, no higher Stamp-duty than one penny shall be chargeable on any newspaper printed on one sheet of paper containing a superficies not exceeding 2295 inches. The superficies in all cases to be one side only of the sheet of paper, and exclusive of the margin of the letterpress.

A supplement published with a newspaper duly stamped with one penny duty, such supplement being printed on one sheet of paper only, and together with the newspaper containing in the aggregate a superficies not exceeding 2295 inches, shall be free from Stamp-duty.

Any other supplement to a duly-stamped newspaper shall not be chargeable with a higher Stamp-duty than one halfpenny, provided it does not contain a superficies exceeding 1148 inches.

And any two supplements to a duly-stamped newspaper shall not be chargeable with a higher Stamp-duty than one halfpenny on each, provided each supplement be printed and published on one sheet of paper only, and that they contain together a superficies not exceeding in the aggregate 2295 inches.

No paper containing news, &c., is to be deemed to be a newspaper within the 6th and 7th Wm. IV., c. 76, or any Act relating to Stamp-duties on newspapers, unless the same shall be published periodically, or in parts or numbers at intervals not exceeding twenty-six days between the publication of any such two parts or numbers.

LETTER OR POWER OF ATTORNEY.

	£	s.	d.
Letter or Power of Attorney, or commission or factory in the nature thereof	1	10	0

And where the same, together with any schedule or other matter put or endorsed thereon, or annexed thereto, shall contain 2160 words or upwards, then for every entire quantity of 1080 words contained therein, over and above the first 1080 words, a further progressive duty at 20s. under 55th George III., but under Act of 1850 — 0 10 0

STAMP AND OTHER GOVERNMENT DUTIES (*Continued*).

BONDS AND MORTGAGES.

Not exceeding £50	.. 1s. 3d.	Exc. £150 and not exc. £200	.. 5s. 0d.
Exc. £50 and not exc. 100	.. 2 6	,, 200 ,, 250	.. 6 3
,, 100 ,, 150	.. 3 9	,, 250 ,, 300	.. 7 6

And where the same shall exceed £300, then for every £100, and also for any fractional part of £100, 2s. 6d.

And where any such bond or mortgage shall contain 2160 words or upwards, then for every entire quantity of 1080 words contained therein over and above the first 1080 words there shall be charged the further progressive duty following: viz., where such bond or mortgage shall be chargeable with any *ad valorem* stamp-duty, not exceeding 10s., a further progressive duty equal to the amount of such *ad valorem* duty or duties. And in every other case a further progressive duty of 10s. See, as to Inland Revenue Bonds, the 18th and 19th Vict., c. 78, s. 6.

LICENCES.

	£	s.		£	s.
For Marriage, if special ..	5	0	For Appraisers	2	0
Ditto, if not special	0	10	Stage Carriage Licence, for carriage	3	3
For Bankers	30	0	Hackney Carriage Licence, for every carriage, yearly duty ..	1	0
For Pawnbrokers, within the limits of the twopenny post	15	0	Ditto weekly duty, including Sunday	0	7
Ditto, Elsewhere	7	10	Ditto, duty, excepting Sunday	0	6
Ditto, within the City of Dublin, and Circular Road ..	7	10	Selling Beer, to be drunk on the Premises	3	3
For Hawkers and Pedlars, on foot	4	0	Ditto, not to be drunk on the Premises	1	1
Ditto, with one horse, ass, or mule	8	0			

PATENTS FOR INVENTIONS—STAMP DUTIES ON.

On petition for grant of letters-patent	£5	0	0
On certificate of record of notice to proceed	5	0	0
On warrant of law officer for letters-patent	5	0	0
On the sealing of letters-patent	5	0	0
On specification	5	0	0
On the letters-patent, or a duplicate thereof, before the expiration of the third year	50	0	0
On the letters-patent, or a duplicate thereof, before the expiration of the seventh year	100	0	0
On certificate of record of notice of objections	2	0	0
On certificate of every search and inspection	0	1	0
On certificate of entry of assignment or licence	0	5	0
On certificate of assignment or licence	0	5	0
On application for disclaimer	5	0	0
On caveat against disclaimer	2	0	0
On office copies of documents, for every ninety words	0	0	2

PROPERTY AND INCOME TAX.

From April, 1858, to April, 1860, all incomes amounting to and exceeding £100 per annum are taxed at the rate of 5d. in the pound.

Exemption of Premiums from Income-Tax.—Under a recent Act of Parliament, the premiums paid by a person for an Assurance on his own life, or on the life of his wife, or for a Deferred Annuity to his Widow, are declared free from Income-tax, provided such Premiums do not exceed one-sixth of his returnable income.

SUCCESSION DUTY.

The Succession Duty Act grants the following duties to her Majesty, and they are to be considered as stamp duties:—Where the succession shall be the lineal issue or lineal ancestor of the predecessor, a duty at the rate of £1 per centum upon such value; where the succession shall be a brother or sister, or a descendant of a brother or sister, of the predecessor, a duty at the rate of £3 per centum upon such value; where the succession shall be a brother or sister of the father or mother, or a descendant of a brother or sister of the father or mother, of the predecessor, a duty at the rate of £5 per centum upon such value; where the succession shall be a brother or sister of the grandfather or grandmother, or a descendant of the brother or sister of the grandfather or grandmother, of the predecessor, a duty at the rate of £6 per centum upon such value; and where the succession shall be in any other degree of collateral consanguinity to the predecessor than is described, or shall be described, or shall be a stranger in blood to him, a duty at the rate of £10 per centum upon such value. There is an interpretation clause of the terms, &c., used in the Act. The term "personal property" is not to include leaseholds, but shall include money; and the term "property" is to include real and personal property, real estates, and all other property.

DUTIES PAYABLE ON INHABITED HOUSES OF THE ANNUAL VALUE OF £20, OR UPWARDS.

The duty is 6d. in the pound in respect of dwelling-houses occupied by any person in trade who shall expose to sale and sell any goods in any shop or warehouse, being part of the same dwelling-house, and in front and on the ground or basement story thereof; or by a person licensed to sell therein, by retail, beer, &c.; or as a farmhouse by a tenant, or farm servant, and *bonâ fide* used for the purpose of husbandry only.—The duty is 9d. in the pound for dwelling-houses not occupied and used for any of the purposes described in the preceding.

DUTIES ON LEGACIES, &c.,

Of the value of £20 per cent or upwards.

To children or their descendants, or lineal ancestors of the deceased	£1	0	0
Brother or sister, or their descendants	3	0	0
Uncle or aunt, or their descendants	5	0	0
Grand uncle or aunt, or their descendants	6	0	0
All other relations, or strangers	10	0	0

The husband or wife of the deceased not chargeable with duty.

MALE SERVANTS.

For every servant above 18 years of age, annually	£1	1	0
Ditto. under 18 years of age ,, ...	0	10	6

ARMORIAL BEARINGS.

When chargeable to carriage duty at £3 10s. (annually)	£2	12	9
When not so chargeable	0	13	2

DOGS.

For every dog of whatever description or denomination £0 12 0

Provided always, that no person shall be chargeable with duty to any greater amount than £39 12s. for any number of hounds, or £9 for any number of greyhounds, kept by him in any year.

Exemptions.—Any person in respect of any dog *bonâ fide* and wholly kept and used in the care of sheep or cattle, or in driving or removing the same; provided no such dog shall be a greyhound, hound, pointer, setting dog, spaniel, lurcher, or terrier.

HORSES LET TO HIRE.

(Omnibuses and Cabs excepted.)

	£	s.	d.
Where the person taking out the licence shall keep at one and the same time to let for hire one horse or one carriage only	7	10	0
Where such person shall keep any greater number of horses or carriages, not exceeding two horses or two carriages	12	10	0
Not exceeding four horses or three carriages	20	0	0
Not exceeding eight horses or six carriages	30	0	0
Not exceeding twelve horses or nine carriages	40	0	0
Not exceeding sixteen horses or twelve carriages	50	0	0
Not exceeding twenty horses or fifteen carriages	60	0	0
Exceeding fifteen carriages	70	0	0
Exceeding twenty horses, then for every additional number of ten horses, and for any additional number less than ten over and above twenty, the further additional duty of	10	0	0

DUTIES ON HORSES AND MULES.

	£	.	.
For every horse kept or used for racing	3	17	0
For every other horse, and for every mule, exceeding respectively the height of thirteen hands of four inches to each hand, kept for the purpose of riding, or drawing any carriage chargeable with duty	1	1	0
For every horse and mule exceeding the height of thirteen hands, kept for any other purpose	0	10	6
For every pony or mule not exceeding the height of thirteen hands, kept for the purpose of riding, or drawing any carriage chargeable with duty	0	10	6
And for every pony or mule kept for any other purpose	0	5	3

Exemptions.—Any horses or mules kept solely for the purposes of trade or husbandry.

DUTIES ON CARRIAGES.

	£	s.	d.
For every carriage with four wheels, where drawn by two or more horses or mules	3	10	0
Where drawn by one horse or mule only	2	0	0
For every carriage with four wheels, each being of less diameter than thirty inches, where drawn by two or more ponies or mules, neither of them exceeding thirteen hands in height ..	1	15	0
Where drawn by one such pony or mule only	1	0	0
For every carriage with less than four wheels, where drawn by two or more horses or mules	2	0	0
Where drawn by one horse or mule only	0	15	0
Where drawn by one pony or mule not exceeding thirteen hands in height	0	10	0
Carriages kept and used solely for the purpose of being let for hire, one half of the above-mentioned duties respectively.			
For any carriage with four wheels used by any common carrier	2	6	8
And where the same shall have less than four wheels	1	6	8

Exemptions.—Any waggon, van, cart, or other carriage, to be used solely in the course of trade or husbandry.

STAGE CARRIAGES.

Original yearly licence for	£3	3	0
Supplementary licence for	0	1	0
Duty per mile	0	0	1

No compounding for those duties is henceforward allowable.

HACKNEY CARRIAGES.—(CABS.)

FARES BY DISTANCE.—Carriages drawn by one horse—For any distance within and not exceeding one mile, 6d.; for any distance exceeding one mile, 6d. for every mile, and for every part of a mile over and above any number of miles completed within a circumference of four miles from Charing-cross. 1s. per mile for every mile or part of a mile beyond the four-mile circumference when discharged beyond that circumference.

FARE BY TIME.—2s. for any time not exceeding one hour; 6d. for every fifteen minutes over the hour.

For every hackney carriage drawn by two horses one-third above the rates and fares hereinbefore mentioned.

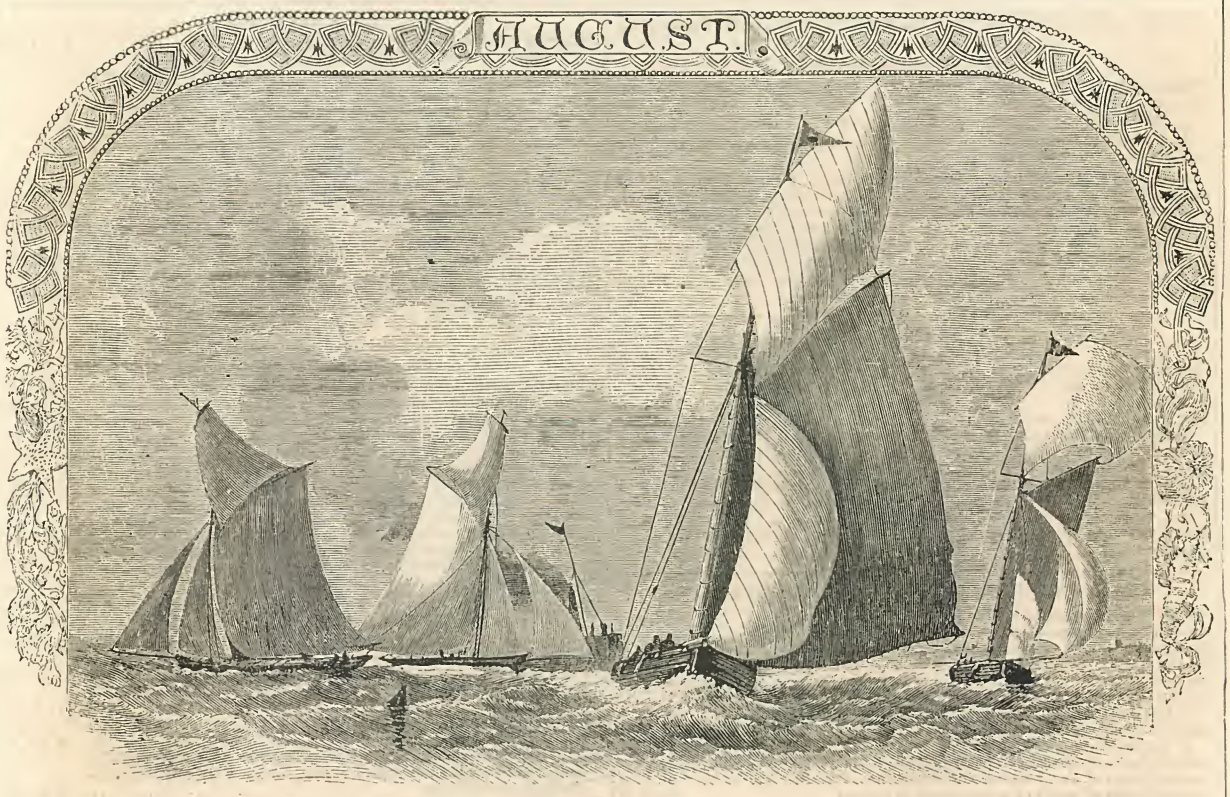
The fares to be paid according to distance or time, at the option of the hirer, to be expressed at the commencement of the hiring; if not otherwise expressed, the fare to be paid according to distance.

No driver shall be compellable to hire his carriage for a fare to be paid according to time between eight o'clock in the evening and six in the morning.

When more than two persons shall be carried inside any hackney carriage, 6d. is to be paid for each person above two for the whole hiring, in addition to the above fares. Two children under ten years of age to be counted as one adult person.

When more than two persons shall be carried inside any hackney carriage with more luggage than can be carried inside the carriage, a further sum of 2d. for every package carried outside the said carriage is to be paid by the hirer in addition to the above fares.

AUGUST.



YACHTING.

Day of Month.	Day of Week.	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London.	MOON. Souths.	MOON. Sets at London.	Age.	HIGH WATER AT London Bridge. Morn.	London Bridge. Aftern.	Liverpool Dock. Morn.	Liverpool Dock. Aftern.
			H. M.	H. M. s.	H. M.	H. M.	H. M.	H. M.	Days	H. M.	H. M.	H. M.	H. M.
1	W	Day breaks 1h. 30m.	4 25	12 6 1	7 46	7 42	—	3 52	○	1 51	2 13	11 11	11 30
2	Th	Twilight ends 10h. 34m.	4 27	12 5 57	7 44	7 58	0 17	5 4	15	2 33	2 52	11 47	—
3	F	Bank of England establ., 1732	4 28	12 5 52	7 42	8 12	1 1	6 16	16	3 9	3 25	0 3	0 18
4	S	Oyster season comm.	4 30	12 5 47	7 41	8 25	1 42	7 25	17	3 40	3 55	0 33	0 48
5	☽	9TH S. aft. TRIN.	4 31	12 5 41	7 39	8 36	2 21	8 33	18	4 10	4 25	1 3	1 18
6	M	Atlantic Tel. open., 1858	4 33	12 5 34	7 37	8 49	3 1	9 42	19	4 40	4 55	1 33	1 48
7	Tu	Atlantic Tel. comm., 1857	4 35	12 5 27	7 35	9 3	3 41	10 50	20	5 10	5 25	2 3	2 18
8	W	*Tr. of our Lord*	4 36	12 5 20	7 34	9 21	4 23	Aftern.	21	5 40	5 57	2 35	2 52
9	Th	Brit. Port. Gall. est. 1857	4 38	12 5 12	7 32	9 43	5 8	1 13	☾	6 14	6 32	3 10	3 31
10	F	*St. Lawrence*	4 39	12 5 3	7 30	10 14	5 56	2 25	23	6 53	7 16	3 54	4 21
11	S	Twilight ends 9h. 59m.	4 41	12 4 53	7 28	10 56	6 49	3 35	24	7 43	8 15	4 53	5 31
12	☽	10TH S. aft. TRIN.	4 42	12 4 44	7 26	11 53	7 45	4 36	25	8 53	9 36	6 14	6 59
13	M	Relief of Arrah, 1857	4 44	12 4 33	7 24	Morn.	8 44	5 27	26	10 21	11 5	7 43	8 22
14	Tu	George Combe died, 1858	4 46	12 4 22	7 22	1 5	9 43	6 5	27	11 44	—	8 56	9 25
15	W	Gas first used in London, 1807	4 47	12 4 11	7 20	2 28	10 42	6 34	28	0 18	0 47	9 52	10 18
16	Th	Battle of Bithoor, 1857	4 49	12 3 59	7 18	3 58	11 38	6 57	●	1 14	1 40	10 41	11 3
17	F	Duchess of Kent born, 1786	4 50	12 3 46	7 16	5 28	Aftern.	7 16	1	2 3	2 25	11 25	11 46
18	S	Financial Reforms by Turkey, 1858	4 52	12 3 33	7 14	6 58	1 24	7 32	2	2 47	3 8	—	0 7
19	☽	11TH S. aft. TRIN.	4 53	12 3 20	7 12	8 27	2 16	7 49	3	3 29	3 50	0 28	0 48
20	M	Day breaks 2h. 36m.	4 55	12 3 6	7 10	9 27	3 8	8 7	4	4 10	4 30	1 8	1 28
21	Tu	Twilight ends 9h. 25m.	4 57	12 2 51	7 8	11 23	4 1	8 29	5	4 50	5 11	1 49	2 11
22	W		4 58	12 2 37	7 6	Aftern.	4 56	8 56	6	5 33	5 55	2 33	2 55
23	Th	War with America, 1775	5 0	12 2 21	7 4	2 9	5 53	9 32	☽	6 17	6 41	3 19	3 45
24	F	*St. Bartholomew*	5 1	12 2 5	7 2	3 17	6 49	10 20	8	7 7	7 35	4 13	4 47
25	S	Indian Mutiny Fund commenced, 1857	5 3	12 1 49	6 59	4 13	7 45	11 20	9	8 9	8 51	5 29	6 15
26	☽	12TH S. aft. TRIN.	5 5	12 1 32	6 57	4 55	8 38	Morn.	10	9 37	10 22	7 0	7 43
27	M	[Prince Albert born, 1819	5 6	12 1 15	6 55	5 25	9 28	0 27	11	11 5	11 47	8 25	9 0
28	Tu	*St. Augustine*	5 8	12 0 58	6 53	5 48	10 15	1 40	12	—	0 22	9 28	9 53
29	W	Gen. Sir C. Napier died, 1853	5 9	12 0 40	6 51	6 6	10 59	2 53	13	0 50	1 15	10 12	10 30
30	Th	Louis Philippe died, 1850	5 11	12 0 21	6 49	6 20	11 40	4 4	14	1 34	1 52	10 48	11 6
31	F	Twilight ends 8h. 55m.	5 13	12 0 3	6 47	6 33	Morn.	5 14	○	2 10	2 28	11 22	11 36

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	6 7 M	0 57 A	7 47 A
	6	5 31	0 25	7 19
	11	4 51	11 51 M	6 52
	16	4 7	11 20	6 34
	21	3 37	10 59	6 22
	26	3 25	10 51	6 17
Venus.	1	3 17	10 40	6 3
	6	2 51	10 15	5 39
	11	2 30	9 55	5 20
	16	2 12	9 39	5 6
	21	1 57	9 26	4 55
	26	1 46	9 16	4 46
Mars.	1	7 36 A	10 53 A	2 15 M
	6	7 13	10 29	1 50
	11	6 50	10 7	1 28
	16	6 29	9 46	1 7
	21	6 7	9 26	0 49
	26	5 47	9 8	0 32
Jupiter.	1	4 12 M	11 58 M	7 44 A
	6	3 58	11 42	7 26
	11	3 44	11 27	7 10
	16	3 32	11 12	6 52
	21	3 18	10 57	6 36
	26	3 4	10 41	6 18
Saturn.	1	6 2	1 17 A	8 32
	6	5 47	1 0	8 13
	11	5 30	0 42	7 54
	16	5 14	0 25	7 36
	21	4 58	0 8	7 18
	26	4 43	11 51 M	6 59
Uranus.	1	11 47 A	7 58	4 5
	6	11 28	7 39	3 46
	11	11 9	7 20	3 27
	16	10 50	7 1	3 8
	21	10 31	6 42	2 49
	26	10 12	6 23	2 30

THE YOHAMITE FALLS (2700 FEET HIGH), MARIPOSA COUNTY, CALIFORNIA.—FROM "THE ILLUSTRATED LONDON NEWS."

BRITISH INSECTS AND BUTTERFLIES.

JULY AND AUGUST.

THE fervid month of July opens upon us. Far too limited is our space to enable us to say much about the multitudinous larvæ, which now throng the garden, the orchard, and the woodland. Yet can we not altogether omit some notice of them. We pluck a leaf. How tortuous is the mining of a minute grub, which feeds upon the tender succulent substance between its two outer tables, leaving a transparent track as it proceeds on its devious course.

Here is a rolled-up leaf; it is the home of a caterpillar; no little toil has it occasioned the inmate, and many are the silken strings by which the leaf has been drawn into and secured in its position. It is a little bale, with a longitudinal tube for the occupation of the indweller, which comes forth to feed at stated periods. Far more delicate and curious are the tenements of other leafrollers. But we must hasten on.

Some are leaf-bower makers. Generally these caterpillars associate in colonies, and by their united exertions contrive to draw a number of adjacent leaves together, securing them by silken threads, so as to form a leafy tent, which they occupy for a season, migrating as pasturage fails to another locality. Curious are the habits of many species of the weevil tribe; we speak of the larvæ.

The grubs to which we particularly allude lead a solitary life; well-fed anchorites, they fare daintily and get fat. In former times some were regarded as luxuries of the table, and in the present day, both in the East and West Indies, the large larva of the palm weevil is reckoned an epicurean *morceau*.

In our country there is a weevil (*Balanus nucum*) which plays a sad part as far as filberts and hazelnuts are concerned. You may crack nut after nut, and meet with disappointment. But how can the egg be deposited within the hard nutshell? In this manner. While the nut is yet young, and its shell tender, the weevil, by means of its minute but sharp mandibles at the end of her long snout, perforates the shell; slight is the wound, but it suffices for the introduction of a single egg, which in due time gives birth to a grub. As the nut develops the grub grows, feeding upon the kernel, and filling the vacant space with its egesta.

Often do we find the grub of a weevil in the core of the apple: it has left a filled-up mine in its progress to the centre.

In some respects the weevils, as gall or excrescence makers, emulate the cynips tribe (the producers of the gallnuts of commerce). The cynips uses its long, flexible, keenly-pointed ovipositor; the weevil its diamond-edged jaws. In each case the puncture, whether into leaf, or bark, occasions a morbid action in the adjacent tissue, and the result is a nidus for the grub according to its species. The gallnuts of commerce, and those mossy-looking ruddy bodies (called *Bedeguar*) which are conspicuous on the wild rose of the hedgerow, are due to certain species of cynips.

In like manner the weevil produces gallnuts, varying in size and other particulars, upon leaves and tender twigs; but, besides these, certain species give rise to nodes, excrescences, or tubercles, within which the maggots dwell. The roots of young cabbage plants, and those also of the hollyhock, are often deformed by the multitude of these excrescences which annoy the careful gardener.

Were a large collection of living caterpillars placed before the eye of a person not professedly an entomologist, he would gaze with astonishment upon their varied forms and their general peculiarities.

Many are tinted with the most exquisite dyes; some are grotesque, others repulsive. Not a few, as the large caterpillar of the tiger-moth (*Arctia caja*), are densely covered with long bristly hairs. These caterpillars when alarmed roll themselves up into a ball, and, hedgehog-like, will drop from a considerable height to the ground without injury. Some caterpillars deceive the eye by a combination of colouring and action. Such are the geometric caterpillars of a group of moths curious alike in their attitudes and mode of progression.

Among other singular caterpillars of the moth tribe we may notice that of the puss moth, remarkable for the odd positions which it assumes, and the changes it undergoes during its growth. We might here present to our reader a legion of similar examples; but our space is restricted.

The water presents us, in the instance of the caddis-worm (*Phryganea*) and others, the example of larvæ making unto themselves a domicile, which, snaillike, they carry about with them. Not unique are they in this practice; they are imitated by larvæ anything but aquatic in their habits. Who is not familiar with those household pests, the clothes-moths (*Tineæ*)? Take one of these moths, say the *Tinea pellionella*. Abundance of eggs does the female lay, and thence issue the doers of the mischief; that is, the little grubs or larvæ. Fur, wool, woollen fabrics, hair, and feathers are the main objects of their ravages, especially if not exposed to the light. Carefully may a lady put away her muff, boa, or tippet, deeming all secure; as winter approaches the articles are unpacked; alas, in what a state! The moth has done its work. But about the larva. It encases itself in a felted tunic; in fact, it dresses itself, and carries on its ravages in great comfort. No shears cut closer than the jaws of this grub: it appropriates the finest underdown, binding the filaments together with a silk secretion, till a feltlike case is made, within which it resides. As it grows it adds to the dimensions of this case, its diameter being increased by the ingrafting of a slip of such a breadth (narrow of course it must be) as to make the "fit" comfortable. Week after week does it go on, devouring the fine under fur, or the basal down of the feathers.

We might here enlarge our observations, but it is time that we turn to our Plate. We figure the Swallow-tail Butterfly (*Papilio machaon*), the great Tiger-moth (*Arctia caja*), the Death's-head Hawk-moth (*Acharonta atropos*), and a species of lace-wing fly (*Genus Hemerobius*, Linn.) From among the coleoptera we have selected the noble Stag-beetle (*Lucanus cervus*), and the fierce Tiger-beetle (*Cicindela campestris.*)

The swallowtail is rare in the more northern parts of England; indeed, it is common nowhere. It is, perhaps, more abundant in the fenny districts of Cambridgeshire than elsewhere. Essex, Middlesex, Sussex, Kent, and also Norfolk, from time to time afford us specimens; it has been taken in Yorkshire, but is not found, as it would appear, either in Scotland or Ireland. It is more common in the warmer portions of the Continent than in our island, and is said to be plentiful in Egypt and Syria. In our country it makes its appearance in June, but it continues to the close of August; such, at least, are the months in which it has been observed. The caterpillar is partial to umbelliferous plants, as the fennel and carrot, and sometimes in France, where the insect is common, produces considerable injury. It is known in France by the popular name of *Le Grand Carottier*. The death's-head hawk-moth is the largest and most remarkable of our British *Sphingidæ*: it often exceeds four inches in the expanse of its wings, but we have seen many specimens from the Continent considerably larger. It is spread over Europe generally, and everywhere is regarded with superstition. It bears on the back of its thorax markings resembling those of a "death's-head," and, strange to relate, it emits when captured a shrill cry; no wonder, then, that it is regarded as a creature of evil omen. We read that sometime since, while an epidemic was raging in Brittany with great violence, these moths abounded in vast numbers, and that to their malign influence the mortality was popularly attributed.

The death's-head hawk-moth is mischievous enough, without being charged with "deeds of darkness." It is a most notorious despoiler of the hives of the honey-bee. It not only robs the combs of their nectar-stores, but scatters the terrified bees in every direction. The fact is very singular, and strange it is, that without sting or shield, and with no advantage except that of size and courage, this moth should be capable, singly and unassisted, of contending successfully with a whole horde of sting-armed insects and driving them from their fortress. By what magic spell is it protected—what is the malign influence it exerts over these industrious insects, noted for their promptitude of defence? We do not pretend to give an answer.

Among our most beautiful moths, the great tiger-moth stands conspicuous; it is by no means an uncommon species, and its great hairy caterpillar, a favourite food of the cuckoo, is a tenant of our gardens, feeding upon the lettuce and early esculent vegetables. The moth appears in July, and continues through August and the early part of September, or even later. It is strictly crepuscular or nocturnal in its habits, sluggishly reposing during the day. With respect to tone of colouring, it is subject to some variation, but the bold, abrupt markings of its wings contrast admirably with the white ground upon which they are painted.

A pretty little fly is the lace-wing. It is a four-winged fly belonging to the Linnean genus Hemerobius, with finely-reticulated wings. Elegant as these insects are, their odour, that of the *H. Perla* for example, is most disgusting. The eggs are attached by long slender peduncles to the twigs of various plants or shrubs, as the lilac, &c. The species of Hemerobius, in all their stages after exclusion from the egg, feed upon small insects, especially the aphides; the larvæ have six feet, and issue from eggs deposited on the leaves in the midst of amphides, so that their food is ready for them. The lace-wing is an assiduous insect-hunter, and rivals the ladybird in the destruction of the aphis. The *H. Perla* is common in gardens.

Reverting to the moth tribe, we may here observe that, though they are generally regarded as nocturnal insects, such is not universally the case; some indeed are diurnal, preferring, however, dull and cloudy weather to a sky glowing with the fervid rays of the sun.

Again, all nocturnal moths are not strictly so. Some are crepuscular (lovers of eventide); some are active chiefly during the stilly hours of midnight; while others come forth between the hours of midnight and early dawn. Hence the strict division of moths into diurnal and nocturnal seems to us to be rather artificial than consonant with nature.

Turn we now to the Coleoptera. The British species alone amount to thousands in number, and their exclusive study is a work of long-continued application.

There is no end to variety in the habits of the Coleoptera. To say that some groups are terrestrial, others aquatic, others arboreal, others earth-miners, wood-miners, or bark-miners, is to say but little. That some are diurnal, others nocturnal, we anticipate. Multiform are the substances vegetable and animal, upon which they feed. Multitudes are carnivorous, armed with jaws as efficient as those of the tiger, wolf, or hyæna. Many seize and devour living prey; others are foul feeders, relishing carrion. On the contrary, whole tribes are herbivorous, devouring grain, leaves, roots, flowers, and the honey of the nectary. Some are quicksighted, alert, and active; some are dull and sluggish; some are adorned with the most brilliant colours, and sparkle as gems; others are destitute of all brilliancy, while not a few gleam as if in armour of gold and bronze.

We represent a fine leaf-eating species, and one of tiger-like habits, viz., the stag-beetle, and the tiger-beetle.

The stag-beetle is remarkable for the staglike antlers (peculiar to the male, for in the female they are undeveloped) which ornament the head. These antlers are modifications of the anterior jaws, and can be used as very efficient pincers. Different opinions have been entertained respecting their use. It has been suggested that they are especial instruments for lacerating the leaves of trees, for the purpose of causing a flow of sap, upon which they feed; if so, why is not the female equally well armed? Let it be remembered that they are tenacious graspers and clingers, and as we believe subserve a purpose upon which, in a paper like the present, we cannot fully dilate.

The tiger-beetle (*Cicindela campestris*), as its name implies, is essentially carnivorous. It is a beautiful, active, but fierce insect, running and flying with great swiftness, and seizing its prey both on the ground and in the air. As carnivorous is the larva as the adult. It is generally found in dry, sandy places, often, as we have seen in Cheshire, by the side of rapid streams. It makes a perpendicular hole in the ground, and keeps its head at the entrance, so as to be ready to catch the insects that unwittingly slip into it. A relatively considerable space of ground is sometimes entirely perforated in this manner.

July has merged into August. So far through the summer have we proceeded, and not yet alluded to the glowworm, but we must not pass it by. This light-shedding insect is the wingless female of a beetle (*Lampyris*), and is very common in many of our southern counties, continuing to give out its radiance from June to the middle or close of August. It is from the abdominal portion of the body that the phosphorescent light is emitted, and, though most brilliant in the female, it is not altogether wanting in the winged male, nor yet in the larva. We once in Bedfordshire, near Woburn, saw, during a warm night, the banks on each side of the road for a full mile literally bestarred with glowworms; nay, the road itself was crowded. Such a sight we had never seen before, and have never seen since. Moss-tufted banks, and the borders of woods and copses, are the favourite localities of this luminous insect.

Up is the broad harvest moon in the clear expanse of heaven. There is a murmur of insects in the air. Beetles hum past us, moths glance round oak and sycamore, and dart down the shady lane, and along the woodland glade. The long-eared bat wheels and sweeps about, and the pipistrelle in abrupt zigzag mazes gives chase to its smaller quarry. The creatures of night are all on the alert; those of the day have retreated to their lurking-places. The wearied reaper slowly wends his way homewards, ready with his sickle for the morning, when the wheatsheaves will stand in goodly array around him.

"LANDSCAPE AND CATTLE." PAINTED BY J. TENNANT.—FROM "THE ILLUSTRATED LONDON NEWS."

As a landscape-painter of native scenery Mr. Tennant deservedly holds a high rank; and as long as the bold mountains, winding valleys, and gushing streams of North Wales are sought out and admired by tourists his works will be popular. Mr. Tennant, with the experience of frequent visits to his favourite haunts, displays a thorough appreciation of the atmospheric effects appropriate to various seasons of the year and various periods of the day. His colouring is always pure, healthy, and pleasing. In the little work which we engrave, and which is one of the artist's numerous contributions to the Suffolk-street Gallery this year, we have a most picturesque and varied scene—combining mountain, wood, and water—the effect of which is heightened by the introduction of some figures and cattle, judiciously grouped. The sky is mottled with clouds; but a bright sunshine struggles through all obstructions, and lights up the purling stream on the right, as well as the centre of the picture where the figures are located. Altogether, we have here a charming specimen of true British landscape, most artistically produced.

GATHERING APPLES.

Day of Month	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Morn.	MOON. Sets at London. Morn.	Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Dock. Morn.	HIGH WATER AT Liverpool Dock. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	S	*St. Giles*	5 14	11 59 44	6 44	6 44	—	6 22	16	2 44	2 58	11 50	—
2	S	13TH S. aft. TRIN.	5 16	11 59 25	6 42	6 58	1 0	7 30	17	3 12	3 26	0 4	0 18
3	M	Failure of Atlantic Tel., 1858	5 17	11 59 6	6 40	7 11	1 40	8 39	18	3 40	3 54	0 32	0 46
4	Tu	New Style introduced, 1752	5 19	11 58 46	6 37	7 27	2 21	9 49	19	4 8	4 22	1 0	1 14
5	W	Comte died, 1857	5 21	11 58 26	6 35	7 47	3 5	10 59	20	4 36	4 50	1 28	1 43
6	Th	Riots at Nottingham, 1854	5 22	11 58 6	6 33	8 14	3 51	Aftern.	21	5 5	5 21	1 59	2 17
7	F	*Eunurchus*	5 24	11 57 46	6 31	8 51	4 41	1 20	22	5 39	5 57	2 35	2 55
8	S	Sebastopol taken, 1855	5 25	11 57 26	6 28	9 40	5 34	2 23	☾	6 17	6 40	3 18	3 44
9	S	14TH S. aft. TRIN.	5 27	11 57 5	6 26	10 43	6 30	3 18	24	7 6	7 37	4 15	4 56
10	M	Salmon Fishing ends	5 29	11 56 45	6 24	12 0	7 28	4 0	25	8 18	9 7	5 45	6 32
11	Tu	Day breaks 3h. 28m.	5 30	11 56 24	6 22	Morn.	8 25	4 33	26	9 54	10 40	7 18	8 0
12	W	Twilight ends 8h. 19m.	5 32	11 56 3	6 19	1 25	9 21	4 57	27	11 22	11 58	8 36	9 5
13	Th	*Holy Cross*	5 34	11 55 42	6 17	2 52	10 15	5 18	28	—	0 27	9 32	9 56
14	F	Duke of Wellington d., 1852	5 35	11 55 21	6 15	4 23	11 9	5 35	29	0 54	1 18	10 17	10 37
15	S	Cadiz taken, 1596	5 37	11 55 0	6 12	5 53	Aftern.	5 52	●	1 39	1 59	10 58	11 19
16	S	15TH S. aft. TRIN.	5 38	11 54 39	6 10	7 23	0 54	6 11	1	2 20	2 41	11 40	—
17	M	*Lambert*	5 40	11 54 18	6 8	8 55	1 49	6 31	2	3 2	3 23	0 1	0 21
18	Tu	Prior died, 1721	5 41	11 53 57	6 5	10 24	2 45	6 57	3	3 43	4 4	0 42	1 3
19	W	Battle of Poitiers, 1356	5 43	11 53 36	6 3	11 49	3 43	7 30	4	4 25	4 46	1 24	1 45
20	Th	Battle of the Alma, 1854	5 45	11 53 15	6 1	Aftern.	4 42	8 16	5	5 7	5 29	2 7	2 29
21	F	*St. Matthew*	5 46	11 52 54	5 59	2 6	5 39	9 13	☽	5 51	6 14	2 52	3 19
22	S	Twilight ends 7h. 52m.	5 48	11 52 33	5 56	2 54	6 34	10 9	7	6 41	7 13	3 51	4 27
23	S	16TH S. aft. TRIN.	5 50	11 52 12	5 54	3 28	7 25	11 30	8	7 49	8 31	5 9	5 56
24	M	Boerhave died, 1738	5 51	11 51 52	5 52	3 53	8 13	Morn.	9	9 18	10 3	6 41	7 23
25	Tu	Lucknow relieved, 1857	5 53	11 51 31	5 49	4 12	8 58	0 44	10	10 45	11 24	8 2	8 37
26	W	*Cyprian*	5 54	11 51 11	5 47	4 27	9 40	1 54	11	11 59	—	9 4	9 26
27	Th	Order of Jesuits founded, 1540	5 56	11 50 51	5 45	4 41	10 20	3 4	12	0 26	0 48	9 45	10 3
28	F	New River completed, 1613	5 58	11 50 31	5 42	4 54	11 0	4 13	13	1 7	1 25	10 20	10 35
29	S	*St. Michael.* Mich. Day	5 59	11 50 11	5 40	5 6	11 39	5 21	14	1 42	1 57	10 49	11 3
30	S	17TH S. aft. TRIN.	6 1	11 49 51	5 38	5 19	Morn.	6 28	○	2 11	2 25	11 17	11 31

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	3 32 M	10 56 M	6 18 A
	6	3 57	11 9	6 20
	11	4 29	11 24	6 17
	16	5 5	11 40	6 13
	21	5 37	11 53	6 6
	26	6 10	0 6 A	6 0
Venus.	1	1 37	9 8 M	4 39
	6	1 33	9 3	4 33
	11	1 30	8 59	4 28
	16	1 31	8 57	4 23
	21	1 34	8 56	4 18
	26	1 39	8 56	4 12
Mars.	1	5 23 A	8 48 A	0 16 M
	6	5 4	8 33	0 4
	11	4 46	8 19	11 52 A
	16	4 29	8 6	11 43
	21	4 14	7 55	11 36
	26	3 56	7 43	11 30
Jupiter.	1	2 48 M	10 23 M	5 58
	6	2 33	10 7	5 41
	11	2 20	9 52	5 24
	16	2 6	9 36	5 6
	21	1 52	9 20	4 48
	26	1 37	9 4	4 31
Saturn.	1	4 23	11 30	6 38
	6	4 8	11 13	6 18
	11	3 51	10 55	6 0
	16	3 34	10 38	5 42
	21	3 19	10 21	5 23
	26	3 2	10 3	5 4
Uranus.	1	9 49 A	5 59	2 6
	6	9 29	5 40	1 47
	11	9 10	5 21	1 28
	16	8 50	5 1	1 8
	21	8 30	4 41	0 48
	26	8 11	4 22	0 29

WHITTINGTON.—FROM "THE ILLUSTRATED LONDON NEWS."

"WHITTINGTON."

BY F. NEWENHAM.

THE story of Whittington thrice Lord Mayor of London is so well known that his name has passed into a proverb, and gives the title to an institution of our own day directly connected with industry and progress. Whether all the wonderful stories which have been told of Whittington and his cat be true or not, the stone still stands on Highgate-hill marking the spot where he is supposed to have sat down to rest, and to have heard the welcome chimes of Bow bells, "Turn again, Whittington, Lord Mayor of London." On the formation of the Whittington Club, some dozen years ago, the late Douglas Jerrold gave his zealous exertions towards the promotion of the scheme, and afterwards presented to the institution this very picture, painted by F. Newenham, so appropriately consummating the career of the man after whom it was called. This picture perished in the fire which five years ago destroyed the club house; but fortunately a copy had been obtained of it for publication in the ILLUSTRATED LONDON NEWS.

THE CRYSTAL PALACE POULTRY, PIGEON, AND RABBIT SHOW.

This (the show for 1859) was, without doubt, by far the most successful of the summer shows, both as regards the number of visitors and the quality of the birds and animals exhibited. The poultry classes generally were good, the Spanish fowls particularly so. The pigeons were as numerous and as attractive as ever. Some extremely large runts, exhibited by Messrs. Baker of Chelsea, excited much attention, on account of their size being larger than some bantams. The most extraordinary feature of the show was the rabbits, two of which we have engraved on account of their extreme length of ear, being the longest ever known, that of the black and white in the foreground, the property of Mr. Angus, measuring 22¼ inches in length, and 4½ in breadth; and that of Mr. Durham's second prize fawn being 21¾ inches in length and 4½ in breadth.

The next poultry show will be held in February (1860) instead of January as heretofore.

PRIZE RABBITS EXHIBITED AT THE CRYSTAL PALACE POULTRY SHOW, 1859.—FROM "THE ILLUSTRATED LONDON NEWS."

South Kensington Museum (containing works of decorative art, modern pictures, sculpture, and engravings, architectural illustrations, building materials, educational apparatus and books, illustrations of food and animal products) is open on Mondays, Monday evenings, Tuesdays, Tuesday evenings, and Saturdays, free; and on Wednesdays, Wednesday evenings, Thursdays, and Fridays (Students' days) on payment of 6d. each person. From 10 to 4, 5, or 6 in the daytime, according to the season, and from 7 to 10 in the evening.

Parchment Paper.—This substance is prepared by exposing paper to the action of a mixture of two parts of concentrated sulphuric acid and one part of water for no longer time than is sufficient to draw it through the liquid. Thus, in little more than a second of time, a piece of porous, feeble, unsized, paper is converted into a substance so strong that a ring of it ⅞ths of an inch in width, and weighing no more than twenty-three grains, has sustained 92lb.; a similar strip of parchment sustaining about 56lb.

Newly-discovered Action of Light.—According to M. Niepce de Saint Victor's experiments, if a solution of starch or dextrine (one of its constituents, with gum and sugar) be exposed for a short time (say a quarter of an hour for a small quantity) to the action of solar light, the liquid will be converted into glucose (grape sugar). This will tend to explain many a natural phenomena, such as the ripening of fruits, &c. M. Niepce believes that if bunches of grapes at the beginning of autumn were inclosed in paper bags steeped in a solution of tartaric acid, not only would the ripening be accelerated, but the quantity of sugar in the fruit would be greatly increased, tartaric acid, like nitrate of uranium, having the property of absorbing and retaining the light in its condition of chemical efficacy.—*Cosmos.*

Moulting of the Lobster.—Mr. Salter describes circumstantially (in the Linnean Society's Journal) this interesting operation witnessed in his aquarium. The animal, having previously collected a quantity of seaweed as a screen and protection for its soft body, remained for two days in a peculiarly rigid attitude; on the third day a crack was observed along the membrane connected with the first abdominal ring. By a series of strong vibratory actions, and followed by intervals of complete repose, the animal succeeded in completely extricating itself from its covering in about twenty minutes. The membrane of the new shell was perfectly soft, and of a bright blue colour. At first the lobster was shy and inactive, remaining concealed among the seaweed, but in a few hours it moved freely about the aquarium. On the seventh day the shell appeared to be perfectly calcified.

Rearing of Silkworms.—M. Thannaron, President of the Société d'Agriculture de la Drôme, France, has experimented with great success on the rearing of silkworms in the open air, and in rooms not warmed. The worms in the house made their cocoons five days earlier than those in the gardens, but of about 650 cocoons formed in the house 42 contained a dead black worm, which was not the case in any of the cocoons formed in the garden, though they were exposed to wind and rain. Madame Pirodon, at Versoma, near Grenoble, has also informed the Academy that she has caused silkworms to be reared from the egg in rooms with windows open, but supplied with curtains to prevent currents of air from coming on the worms, and also in warm rooms with closed windows. The worms reared in the former produced the best silk of the year; the silk of the worms in the latter was nearly unsaleable. - *Comptes Rendus.*

The Hydrophone.—Dr. Scott Allison gives this name to an indiarubber bag about the size of a watch, so made that it may be fitted readily to the chest or any other part of the body. By this apparatus the sonorous pulses, so to speak, are readily taken up from the solid body or the chest, and are conveyed through the water and membrane on either side, and reach the edge of the aperture of the hearing-tube and the contained air, whether the instrument be the human ear, the flexible stethoscope, or any other hearing-tube. The hydrophone may be employed either in aid of the stethoscope or by itself, as a distinct acoustic instrument.

"CARACTACUS." PAINTED BY J. H. FOLEY.—FROM "THE ILLUSTRATED LONDON NEWS."

OCTOBER.

HERRING-FISHING.

Day of Month.	Day of Week.	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Morn.	MOON. Souths. Morn.	MOON. Sets at London. Aftern.	MOON. Age.	HIGH WATER AT London Bridge. Morn.	HIGH WATER AT London Bridge. Aftern.	HIGH WATER AT Liverpool Dock. Morn.	HIGH WATER AT Liverpool Dock. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	M	*Remigius* Pheasant-shooting beg.	6 3	11 49 32	5 36	5 35	0 20	7 38	16	2 39	2 53	11 46	—
2	Tu	Day breaks 4h. 10m.	6 4	11 49 13	5 33	5 55	1 3	8 49	17	3 8	3 23	0 1	0 15
3	W	Twilight ends 7h. 25m.	6 6	11 48 55	5 30	6 19	1 49	10 1	18	3 37	3 52	0 30	0 44
4	Th		6 7	11 48 37	5 29	6 52	2 37	11 10	19	4 6	4 21	0 59	1 16
5	F	Destruction of New York Crystal Palace, 1858	6 9	11 48 19	5 27	7 37	3 29	Aftern.	20	4 38	4 55	1 33	1 51
6	S	*Faith*	6 11	11 48 1	5 24	8 33	4 23	1 10	21	5 13	5 34	2 12	2 34
7	S	18TH S. aft. TRIN.	6 12	11 47 44	5 22	9 42	5 19	1 56	☾	5 56	6 21	2 59	3 26
8	M	Arrow Lorcha seized, 1856	6 14	11 47 28	5 20	11 0	6 14	2 30	23	6 48	7 21	3 59	4 50
9	Tu	*Denys*	6 16	11 47 12	5 18	Morn.	7 8	2 58	24	8 2	8 46	5 24	6 10
10	W	Oxford and Cambr. Michaelmas Terms begin	6 18	11 46 56	5 16	0 25	8 2	3 19	25	9 32	10 17	6 55	7 36
11	Th	West Indies disc., 1492	6 19	11 46 41	5 13	1 51	8 54	3 38	26	10 58	11 33	8 11	8 39
12	F	Twilight ends 7h. 5m.	6 21	11 46 26	5 11	3 18	9 45	3 55	27	—	0 1	9 4	9 26
13	S	Tr. K. Edw. Conf.	6 23	11 46 12	5 9	4 46	10 38	4 13	28	0 26	0 48	9 47	10 9
14	S	19TH S. aft. TRIN.	6 24	11 45 58	5 7	6 16	11 32	4 32	●	1 9	1 31	10 30	10 52
15	M	Battle of Leipsic, 1813	6 26	11 45 45	5 5	7 48	Aftern.	4 56	1	1 52	2 14	11 13	11 35
16	Tu	Fire at Houses of Parliament, 1834	6 28	11 45 33	5 2	9 18	1 27	5 27	2	2 35	2 57	11 57	—
17	W	*Ethelreda*	6 29	11 45 21	5 0	10 42	2 27	6 8	3	3 19	3 41	0 19	0 41
18	Th	*St. Luke*	6 31	11 45 10	4 58	11 53	3 27	7 2	4	4 3	4 26	1 4	1 26
19	F	Day breaks 4h. 39m.	6 33	11 44 59	4 56	Aftern.	4 25	8 6	5	4 48	5 11	1 49	2 12
20	S	Battle of Navarino, 1827	6 35	11 44 49	4 54	1 27	5 19	9 18	6	5 34	5 58	2 36	3 1
21	S	20TH S. aft. TRIN.	6 36	11 44 40	4 52	1 55	6 9	10 31	☽	6 23	6 52	3 30	4 3
22	M	Battle of Trafalgar 1805	6 38	11 44 31	4 50	2 17	6 55	11 43	8	7 25	8 3	4 41	5 21
23	Tu	Twilight ends 6h. 43m.	6 40	11 44 23	4 48	2 34	7 38	Morn.	9	8 43	9 24	6 2	6 42
24	W	Webster died, 1852	6 42	11 44 15	4 46	2 48	8 19	0 55	10	10 4	10 44	7 22	7 57
25	Th	*St. Crispin*	6 43	11 44 9	4 44	3 1	8 58	2 3	11	11 19	11 45	8 23	8 46
26	F		6 45	11 44 3	4 42	3 14	9 38	3 10	12	—	0 8	9 6	9 25
27	S		6 47	11 43 57	4 40	3 27	10 19	4 19	13	0 28	0 47	9 42	9 59
28		21ST S. aft. TRIN.	6 49	11 43 53	4 38	3 42	11 1	5 27	14	1 4	1 21	10 16	10 31
29	M	*St. Sim. & St. Jude*	6 51	11 43 49	4 36	4 0	11 46	6 38	○	1 38	1 53	10 46	11 2
30	Tu	Day breaks 4h. 56m.	6 52	11 43 46	4 34	4 24	Morn.	7 49	16	2 8	2 24	11 17	11 33
31	W	Twilight ends 6h 28m.	6 54	11 43 44	4 33	4 54	0 34	8 59	17	2 39	2 55	11 50	—

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	6 40 M	0 17 A	5 52 A
	6	7 9	0 27	5 43
	11	7 36	0 36	5 34
	16	8 1	0 45	5 27
	21	8 28	0 54	5 18
	26	8 50	1 2	5 12
Venus.	1	1 45	8 56 M	4 6
	6	1 52	8 56	4 0
	11	2 0	8 57	3 53
	16	2 11	8 59	3 46
	21	2 20	9 0	3 38
	26	2 32	9 2	3 30
Mars.	1	3 41 A	7 33 A	11 25
	6	3 25	7 23	11 21
	11	3 11	7 14	11 17
	16	2 56	7 5	11 14
	21	2 42	6 57	11 12
	26	2 27	6 48	11 9
Jupiter.	1	1 23 M	8 48 M	4 13
	6	1 9	8 32	3 55
	11	0 54	8 16	3 38
	16	0 38	7 59	3 19
	21	0 23	7 42	3 1
	26	0 7	7 25	2 43
Saturn.	1	2 45	9 46	4 47
	6	2 29	9 28	4 27
	11	2 13	9 11	4 9
	16	1 55	8 53	3 51
	21	1 38	8 35	3 32
	26	1 21	8 17	3 13
Uranus.	1	7 51 A	4 2	0 9
	6	7 31	3 42	11 49
	11	7 11	3 22	11 29 M
	16	6 50	3 2	11 9
	21	6 30	2 41	10 48
	26	6 10	2 21	10 28

PARTIAL ECLIPSE OF THE MOON, FEB. 6, 1860.

(*See Diagram, page* 61.)

A PARTIAL eclipse of the Moon takes place on the night of February 6, or morning of February 7, which will be visible at London. The first contact with the penumbra takes place exactly at midnight of February 6; the first contact with the shadow at 1h. 2m. A.M. of February 7; the middle of the eclipse at 2h. 29m. A.M. of February 7; the last contact with the shadow at 3h. 56m. A.M. and the last contact with the penumbra at 4h. 57m. A.M. of February 7. The magnitude of the eclipse, and position of the first and last contacts, as visible to the naked eye, are seen by the diagram at page 61.

DOUBLE STARS.

(*See page* 61.)

THE discoveries of the present century in regard to double stars are among the most extraordinary of the age; and the increase of optical power, both as regards brightness and distinctness of vision, which has been forthcoming to the aid of the observer who intends to devote his energies to this subject, is equally marvellous and apparently inexhaustible. By turns the reflecting and refracting telescopes have assisted him in those delicate researches, and, by turns, the one has claimed superiority over the other; but whilst the former has only apparently been available in the hands of their makers, among which number are the illustrious names of Newton, the two Herschels, Lord Rosse Mason, &c., the latter have been in almost universal use by every astronomer, and the simplicity and ease with which they are managed, and the perfection to which they have been brought in foreign countries by Fraunhofer, Merz, Cauchoix, and, in our own, by Dollond, Wray, Cooke, &c., have at the present time given them the preference over the others in practice. It is beneficial in every respect that both descriptions should have been made use of, not only as testiug the capabilities of each in regard to simplicity of construction and the convenience of the observer. but more particularly to the comparison of the different optical excellences possessed by the glass lens and the metal reflector, which may be summed up in the qualities of space-penetrating power, brightness of the object examined with high powers, perfect definition of the image. and the absence of colour from the field of view. This latter qualification must, however, only apply to the achromatism of the lenses themselves; and, when any bright white star is scrutinised by their aid, it should appear equally colourless as when viewed with the naked eye. In regard to their good definition, the largest star should appear on a steady night not much larger than. and as sharp as, a pinhole pricked in cardboard when held up to the light. These two latter qualifications are of the last importance when measurements of the relative positions of double stars in the sky, according to the cardinal points and their distances, is the subject in dispute. The distances of the most interesting of the double stars are so insignificant in amount that it requires every possible assistance from the instrument and the state of the sky to render them so well defined that these can be accurately measured, in order that their movements in space may be determined. and their positions in after times prognosticated with any certainty.

We give the relative positions of a few of the most remarkable of the coloured double stars at page 61. Iota Cancri, large star, golden yellow; small star, azure blue. Iota Trianguli, golden yellow and indigo blue. Epsilon Hydræ, orange and blue Eta Cassiopeiæ, white and green. Zeta Orionis, yellow and blue. Gamma Androm., orange and blue Mu Can Maj., bright red and bluish-green. 35 Sextantis, golden yellow and blue. Those are the colours observed by Mr. Breen with the Northumberland telescope. but the tints would appear to vary according to the observer, climate, and instrument. In the Engraving at p 67 we see a *coloured* cluster in which the larger stars are blue, green, red, &c., and described by Sir J. Herschel, who observed it at the Cape, as "resembling a superb piece of fancy jewellery."

THE AURORA BOREALIS.

(*See page* 68.)

OUR evenings and nights are but slenderly illumined with any extraordinary atmospheric influences, and the mild radiance of the Zodiacal Light, or the wilder and grander exhibition of the Aurora, are far better seen in other climes. The latter, however, pays an occasional visit to those latitudes, and has been seen once or twice advantageously during the year 1859. Of late years, generally, those appearances have been few and far between. The auroræ which occurred in the years 1847 and 1849 almost vied in grandeur with those which have been witnessed in the Arctic regions, where the endless nights, the fields of snow stretching as far as the eye can reach, the dazzling whiteness of which is in striking contrast with the black sky and blacker waters, add an indescribable strangeness to the celestial phenomenon, in which the ever-flickering flame of light, with its innumerable and ever-changing hues, keeps the observer entranced with its varying splendour. At those times the sky appears like a radiant vault, from the crown of which the auroral beams fall in graceful curves, and. where the lower portions are bordered irregularly, appearing like the waving and silken fringe of a parasol. Such was the case in the aurora of 1849, of which an Engraving is here given from a drawing taken at the Cambridge Observatory by Mr. Breen. The colours of the beams were gorgeous in the extreme, a crimson red generally predominating, which changed at intervals to a golden yellow or pure white, but which, mingling with the azure tint of the sky (apparently), became at times of a greenish, violet blue and steel-grey colour. the tints altogether being as brilliant and transparent as the ruby, topaz, or emerald. The crown of the vault was beautifully defined, an irregular patch of blue sky marking the place where the beams of the aurora met. In by far the greater number of the *auroræ boreales* visible in this country, only a bank of irregular light or a simple arch makes its appearance, whence streamers diverge in all directions. This subject has received considerable attention during the past year from the discoveries made by MM. Gassiot and De la Rive, who find that, by passing the electric fluid through a vacuum in a darkened chamber. all the colours and forms of the coruscations of the aurora can be reproduced, so that it would appear probable that the latter is caused by an electric discharge taking place in a highly-rarefied portion of the upper atmosphere. A similar conjecture had been made by Morgan many years previously. The greatest number of auroræ have been noticed in the months of September. October, and November, though they are of very frequent occurrence likewise in the spring months.

OCCULTATION OF JUPITER BY THE MOON, MAY 24, 1860.

(*See Diagram, page* 63.)

AN occultation of Jupiter by the Moon occurs on May 24. the disappearance taking place at 4h. 34m. and the reappearance at 5h. 47m. P.M. In the last eclipse of this planet visible in those latitudes (which took place in January, 1857) some peculiar features were noticed which may, perhaps be repeated on the present occasion. When Jupiter was seen partly hid by the bright limb of the Moon, a slight depression was noticed at that part of the margin of the latter whence the planet was emerging; and a dark line was seen by one observer, which seemed to separate the two bodies and to denote the line of demarcation of the border of the Moon. This latter appearance was not, however, generally remarked. The *depression* in the margin of the Moon may probably have been owing to the irradiation of the light of that object on the dark sky, which was wanting at that part of the disc which was projected on the bright surface of Jupiter. On the same occasion the satellites of the planet did not vanish when they touched the edges of the Moon, but were seen clearly projected on its surface, where they gradually became faint and disappeared. This may be considered as further evidence of the irradiation of the lunar disc at the time, and which might have been due to the troubled state of the atmosphere. On May 8 1859, an occultation of Saturn by the Moon was well observed in London, an account of which appeared in the ILLUSTRATED LONDON NEWS of May 14. The atmosphere was beautifully serene and clear in London, and the margin of the Moon exquisitely sharp and well defined. The notched edge of the Moon, as its dark margin partially covered the planet, was extremely distinct, and no distortion of the form of the planet was in the least perceptible. At the reappearance of the planet at the bright limb the only noticeable sight was the faintness of the light of Saturn compared with that of the Moon; but none of the phenomena above given in respect to Jupiter were indicated in the slightest degree. The instrument made use of was a very fine refractor of ten inches aperture, by Wray, in the possession of J. Buckingham, Esq., C.E.

THE MOON.

(*See pages* 65 *and* 66).

THE most interesting of the heavenly bodies in a telescopic point of view is one which is fortunately almost always in sight, and constantly displaying new features and phases. In the months of September and October, however, the phenomena of the harvest and hunter's moons (as they are respectively called) lend it increased attraction. and during the wane, at this season, a favourable opportunity is presented of following the various aspects which its mountains and valleys exhibit, when illumined by the Sun at different altitudes. The Engraving, which is copied from a photograph taken by Mr. Breen with the object-glass (alone) of the Northumberland telescope of the Cambridge Observatory, shows it as it would appear when nearly half full through a small telescope furnished with the usual eyepiece. The outlying specks of light result from the tops of the mountains being illumined by the Sun, whilst their bases are still immersed in the shades of the long night of 354½ hours, which is now about to begin or end. The dark patches which are irregularly scattered through the bright crescent of the lunar disc, and which still go by the old designations of seas, oceans, bays, &c, although they have been proved to be without water or other liquid, are best seen at the time of full moon, when even changes may be perceived in their colour. and a dark grey, light grey, greenish, greenish-white, and brownish tints have been detected What the nature of those dark spots may be cannot be told with certainty; it can only be said that there are portions of the lunar surface which reflect more light than others, in a similar manner as the bright sandy deserts and snow-clad mountains on the earth would appear to an observer on the moon to be brighter than the fenlands seas, and forests Although those dark and nearly level surfaces on the moon cover a considerable space. yet the gazer will have his attention arrested by the more varied attractions of the great chains of mountains stretching out in every direction in mighty masses and the component parts of which lie in great irregular blocks piled together in the greatest confusion. But still more remarkable than the mountain chains of the Alps. the Apennines. &c.. is the appearance of an immense number of regular circular mountains which are scatt red in every direction. and are of every conceivable size The general characteristic of this class of formations, is the well-developed circular wall which surrounds them. gently rising from without. but mostly descending abruptly in the interior They are of various sizes and depths, some of them so deep and the declivity in them so great, that the shadows can be perceived in the interior even when the Sun is at an equal altitude over them with that which it has in our latitudes at noon in summer. The height of the walls surrounding those annular mountains is sometimes enormous. and they are higher than any of the peaks on the plains or mountain chains. Thus. the mountain Newton, situated at the South Pole, is 23 800 feet, and the mountain Casatus is 22,800 feet in height Some of the annular mountains, instead of being concave in the interior, are quite level, and the latter formations are generally larger. Many of those range between 100 and 150 miles in diameter The central peak. which is seldom wanting in the walled concavities is not seen in the walled plains, nor are the latter on the whole to be compared with the others in the regularity or completeness of their structure, a great portion of the surrounding wall being frequently missing. Even the immense dark seas may be considered as belonging to the circular mountains, partaking as they do of that formation. The Mare Serenitatis is about 435 miles from north to south, and 425 miles from east to west. or about equal in surface to the British Islands. The bright streams which radiate from many of the mountains are best seen in Tycho. which make this a conspicuous object at the time of full moon, upwards of a hundred different streaks proceeding from it and some of them reaching to a distance of 500 miles from the central crater! One of them can be followed for a distance of 1800 miles

A small portion of the lunar disc near the mountain Ptolemy as seen with a power of 500 in the Northumberland telescope is given in the Engraving at p. 66.

BRITISH INSECTS AND BUTTERFLIES.

SEPTEMBER AND OCTOBER.

THE fervid heat of July and August is now beginning to moderate; we say beginning, for the early part of September is often as intense as the preceding month; and as multitudinous are the insects upon the wing, and the devouring caterpillars in our garden, as they were some weeks ago. White butterflies are hovering over the fields and gardens around us, and the females are depositing their eggs by thousands upon such vegetables as are fitting food for the larvæ.

It is at this season that the great swarming of ants takes place. They issue forth in millions, and condense into a cloud, rising and falling, now dispersing, now uniting into columns, whirling and twisting, and ever changing their tactics. These winged ants are males and females, for the neuters (and there are neuters among ants as among bees) never assume wings—wings which, after all, are only temporary, enduring only for a few days, and then to be cast off. Sometimes, especially on the Continent, these ant-swarms are astounding, a whole district contributing to swell the phalanx, consisting of myriads upon myriads in dense array, like masses of vapour, twisting about in fantastic evolutions. It is the great pairing season. Of this horde most perish—all the males, and the majority of the females. The males, the object of their existence being accomplished, soon cease to exist; they have no sting, neither have they strong jaws for labour or the acquisition of food; but the groundling wingless neuters play a better part—they have yet a task to perform. Now, with regard to the females, which may be known by their size and the superior amplitude of their wings, many escape, and we believe that some males, which do not quit the nest, also avoid destruction. The fertile females, which survive the general fate, now settle upon stones, posts, paling, and similar objects, and it is the part of the workers, or neuters, to issue forth to their rescue, and reconduct them to the nest. Their wings now drop off, or become shrivelled and are plucked away by their own feet or mandibles. Nevertheless, certain numbers of females escape the neuters, and become the founders of new colonies, laying their eggs, and, as it would appear, attracting a few workers to participate in their toil, for they must as yet labour for themselves.

We have said that some males do not quit the nest, and the observation applies also to some females, who are, in fact, prisoners, and not allowed to depart from the original settlement. Prisoners as they are, they are kindly treated, and are each attended by one or more workers, whose duty it is to supply their wants. They exhibit (unlike the queen bees) no rivalry; crowds, however, follow in their train, and, when they lay their eggs, these are taken by the workers, and lodged in appropriate chambers. So minute are the eggs as to be scarcely perceptible to the naked eye. They occupy the express care of a body of workers. From time to time (as deposited) they are carefully collected, and duly moistened (a plan which seems necessary to their development), they are stored in separate apartments, and carried from one to another, as they may require a warmer or moister situation, or as the weather may render needful. In a few days the young grubs are disclosed, and require the most unremitting care. The devotion of the workers to the helpless larvæ is, indeed, extreme; they toil for them, they defend them, they die for them. During all this time the formicary has to be kept in order, its breaches repaired, its galleries cleared out, its arrangement, both internal and external, punctually and sedulously attended to. "Go to the ant, thou sluggard, consider her ways, and be wise."

It is in September that the swarming of wasps takes place. Whole vespiaries at this season turn out their irritable inhabitants, ever prompt to take offence and use their stings. The fondness of this insect for ripe fruits, such as plums and pears, is notorious. A sugar-cask is an especial attraction; but other diet is also acceptable; it enters the shop of the butcher, and uses its jaws upon the joints of beef as they hang on the hooks, or are displayed upon the board. It attacks and devours weaker insects, and will eat a juicy fly with great relish, seizing it on the wing with consummate address. We need scarcely say that wasps construct their vespiary in various situations—in the deep holes of banks, enlarged by labour, in recesses under the roof of old buildings, in the thatch of barns and outhouses, and elsewhere. Strange to say, it is from a single female, which has survived the rains and storms of winter, that the multitudinous tenants of a vespiary proceed. Of these multitudes, which we see around us, all will perish as the winter comes on—all, except certain females, now replete with eggs, on whom depends the continuance of the race. Let us enter into this matter a little more fully. A vespiary in summer contains, first, females of two sorts, a large sort producing the eggs both of workers and females, and a small sort producing only male eggs; secondly, workers or neuters; thirdly, males: fourthly, young, as eggs, larvæ, and pupæ. These accomplish their ultimate metamorphosis in July or August.

We have already said that on the setting in of winter all these tenants of the vespiary perish, except a certain number of females, and these are of the large sort. Survivors of the host, they betake themselves, each alone, to as secure a retreat as it can select, there remaining torpid till roused by the warm breadth of spring. It is now that this lone female commences her labours—she first sets about enlarging and altering the hole or burrow in which she has hybernated, unless, indeed, the old domicile suffices for her purpose. A certain number of cells, often amounting to hundreds, are requisite; she makes the papier-mâché of which they are composed, and lays an egg in each. In a short time a brood of larvæ, of the worker sort, make their appearance. These are assiduously fed, until they assume the pupa state; but in a few days they complete their change, and the queen finds herself surrounded by a crowd of obedient labourers. They begin by enlarging and perfecting the vespiary; they construct additional ranges of cells, in which the queen (as we may call her for distinction's sake) deposits her eggs of females, large and small, and also of other workers. These become in a short time larvæ, and unwearied are the first set of workers in feeding and tending them—no light occupation. In due time these larvæ become fully developed, as females and neuters or workers. The small females now give birth to males, these pair with the large females. Winter comes on, and the large females alone survive; but not all, for the casualties of winter thin their numbers: it is upon these survivors that the perpetuation of the race depends.

Kirby and Spence observe that the number of cells in a well-stocked vespiary sometimes amounts to more than sixteen thousand, and that the number of females amounts to several hundreds. They emerge from the pupa state in August, at the same time with the males, and fly in September, when they pair. Soon afterwards the general mortality commences.

The wasp's nest is made of paper, manufactured from the fibres of soft wood, and worked up with a salivary secretion by means of the powerful jaws. The external envelope of some wasp-nests from abroad which we have examined we have found to be composed of the whitest and finest cardboard, no writing-paper could take ink better; and thus, while the nations of antiquity were using tiles of clay, skins, parchment, or the inner bark (liber) of the papyrus and other plants, there existed from time immemorial an extensive firm of paper-manufacturers whose art was unknown in Egypt, Greece, or Rome.

Who is not acquainted with those elegantly-arranged spider-nets which during September and October are so abundant in lawns and gardens, stretching vertically, or nearly so, by means of rigging from bush to bush, or from branch to branch—they are the spinneret products of the diadem spider (*Epeira diadema*), chiefly perhaps of the female, who is now about to lay her multitude of eggs, which she envelops in a cocoon of silk, placing it in a chosen spot for security. These nests consist of lines radiating from a centre, crossed by others disposed as concentric circles—the whole fabric displaying the effects of consummate skill and quiet perseverance. In the centre, ever watchful, and so sensitive as to feel the slightest jar made by any unwary insect which may dash against it, sits the female. She is marked like a zebra, and is certainly beautiful. Around her, adhering to the glutinous threads, are the carcases of gnats and flies, whose juices she has drained. Larger insects are not safe; we have seen her dart upon a moderate-sized beetle, rolling it round and round, and swathing it with a silken bandage till it has resembled an Egyptian mummy: her poisoned fangs finished the work; when done with it she did not let it remain, as she did the gnats and small flies, but cut it clear from the net, so as to allow it to fall to the ground; perhaps its weight strained the cordage, or it was an unsightly object. We much doubt whether she sucked its fluids, we think not; she seemed to attack it solely for the purpose of destroying and getting rid of it. On more than one occasion we have witnessed this operation, and we have purposely thrown small beetles against the net in order to gain an opportunity of watching her proceedings.

It is at this season that showers of filmy webs called gossamer fall from the atmosphere, covering stubble-fields, grass lands, bushes, and hedgerows. Marvellous did these showers appear to the naturalists of the last century, but more recent observations have solved the mystery. They are the webs of aerial spiders, and their fall is in consequence of meeting with a humid current, as in myriads they float aloft they become damp; those of many individuals coalesce. The sun sets, the night is chilly (it is in the night that the shower takes place), and, overladen with humidity, they fall often covering a considerable area. Next morning the sun rises brightly, and the flocculent carpet spread over field and hedgerow be-gemmed up with minute dewdrops glitters in the rays.

Let us turn to our Plate. Besides wasps and the diadem spider, we have figured some butterflies appropriate to the season, and a water-beetle.

First. The Wall Butterfly or Great Argus (*Hipparchia megæra*)

Secondly. The large Heath Butterfly (*Hipparchia tithonus*).

Thirdly. The Clifden Blue (*Polyommatus Adonis*), a lovely little species which we have taken, as we have the others at the latter end of August and in September, on heaths and furze-clad commons near Reading, Berkshire. The blue of its wings is pure azure. It may be observed that many species of butterfly which are abundant in autumn present us with two annual broods, one in May or June, another in August or September. We may instance the pearl-bordered fritillary (*Melitæa Euphrosyne*), a beautiful species, widely distributed over our island and the adjacent parts of the Continent. We are not aware, however, that any species of the genera *Melitæa*, *Polyommatus*, or *Hipparchia* hybernate during the winter. The action of these heath butterflies, as we may collectively call these tenants of sequestered lanes, and furze or heath lands, is very interesting. All are of comparatively small size, and they flit along before you as you proceed, taking short flights, continually settling on the herbage, and again rising. Their capture, however, by means of a net is easy, for they do not soar aloft and dart off to a distance, as is the habit of some butterflies; on the contrary, they seem as if they invited you to follow them, keeping at a tantalizing distance, secure in their address, and their zigzag evolutions. Their colours are beautiful: some are marked with belts and ocellated spots on a rich brown or orange ground; others are azure blue, with dotted or dark margins to their wings, and the under surface of these, as will be seen in the figures of *Adonis* and *Tithonus*, is as ornate as the upper. If not as showy as their race, they are as attractive from the delicate and stippled character of the pencilling of their wing-plumage, and the lightness of all their actions.

But October is advancing. The foliage of the garden and the grove shows but too plainly that the year is on the decline.

There is a stir and agitation in the insect world. Of thousands the natural termination of their existence has arrived. Caterpillars are rapidly assuming the pupa state; some rolled in leaves, some under bark, some in the ground, some in the water, some suspended against walls and posts. Where, in short, may not the entomologist look for them? Of butterflies, perhaps also of moths, and certainly of numerous dipterous insects, very many species hybernate. With respect to the two former, it is only we suspect, a favoured few, the remnants of a late autumnal brood, that find a safe hybernaculum. Early in spring they reappear, lay their eggs, and die. We do not assert that this is always the case, but believe it to obtain as a general rule at least.

Busy, too, is the beetle tribe. Of this, numbers of hybernating species are now beginning to retire, or have already retired, into their dormitory. They bore into the semi-decomposed wood of mouldering trees; nay, into sounder and harder wood. They burrow beneath the bark; they ensconce themselves under blocks of stone; under beds of moss; in the crevices of rocks or masonary. They sink deep pits in the earth. They plunge, frog-like, into the mud of pools, or streams. But enough.

We have figured a solitary water-beetle resting on the edge of a little pool. It is time for him to think of entering into his submerged hybernaculum. His voracity has left him for the present; for voracious is he during the summer, feeding upon tadpoles and the young fry of fishes, as well as upon aquatic worms, insects, and larvæ. "This is positively his last appearance before the public for the present season." He is about to take a long siesta. His relations and companions, dancers and figurantes on the placid stage of the river's shady nook or the lake's tranquil margin, have already retired.

And now more decided are the golden and russet tints of the foliage. The trees wear a thinner robe. Hoarded are the gifts of Pomona and Ceres, and the brow of Flora is but sparsely garlanded. October gives place to November.

THE ZODIACAL LIGHT.

(*See page* 63.)

DURING the months of February, March, and April, the Zodiacal Light makes its appearance in the western sky shortly after sunset, and in the clear dark evenings the cone of light which it makes is a very conspicuous object, particularly when the twilight recedes into almost perfect darkness. It is also visible in the east before sunrise in September and October. It is remarkable that this phenomenon was not noticed until about the middle of the seventeenth century, when it is first mentioned by Childrey, but it was probably often seen and remarked, but passed over as one of the effects of twilight. In more southerly latitudes the circumstances are more favourable for its observation, the skies being clearer, the twilight shorter, and the direction of the Sun's equator, in which this phenomenon is always seen, being constantly at a greater angle with the horizon, and in those tropical regions where it sometimes continues until midnight it is of course a remarkable object. Its form is pyramidal, the light being brightest at the base, where it is upwards of ten degrees in breadth: it can commonly be traced as far as the *Pleiades*, and at the time of the vernal equinox, it is inclined at an angle of between 60 and 70 degrees to the horizon.

The Engraving represents it as seen in the month of July at the Cape of Good Hope, from a drawing by Professor Piazzi Smyth. The description of it given by Humboldt as seen in tropical regions is vouched for by Professor Smyth as "most vivid and truthful, and can, perhaps, only be fully appreciated by those who have seen it under similar favourable circumstances." "Those who have dwelt long in the zone of palms," says Humboldt, "must retain a pleasing remembrance of the mild radiance of this phenomenon, which, rising pyramidally, illumines a portion of the unvarying length of the tropical nights. I have seen it occasionally shine with a brightness greater than that of the Milky Way, near the constellation of Sagittarius, and this not only in the dry and highly rarefied atmosphere of the summits of the Andes, at elevations of thirteen to fifteen thousand feet, but also in the boundless grassy plains or *llanos* of Venezuela, and on the seacoast under the ever-clear sky of Cumana. The phenomenon is one of peculiar beauty when a small fleecy cloud is projected against the Zodiacal Light, and detaches itself picturesquely from the illuminated background. A passage in my journal during a voyage from Lima to the west coast of Mexico notices such a picture. For the last three or four nights the Zodiacal Light has appeared with a magnificence which I have never before seen. Judging, also, from the brightness of the stars and nebula, the transparency of the atmosphere in this part of the Pacific must be very great. From the 14th to the 19th of March, during a very regular interval of three quarters of an hour after the Sun had sunk below the horizon, no trace of the Zodiacal Light could be seen, although the night was perfectly dark; but an hour after sunset it became suddenly visible, extending in great brightness and beauty between Aldebaran and the Pleiades, and on March the 18th attaining an altitude of 39 degrees."

JUPITER AND SATURN.

(*See pages* 61 *and* 62.)

WHEN it is considered that the Moon is better seen with the naked eye than either of those planets with the best telescopes, it can easily be imagined that our knowledge of their physical constitution is not very great. And it is only in consequence of their vast dimensions that we are able to see them with even moderate advantage, and detect their seasons, their atmospheres, and the duration of their days. They are, indeed, the giants of the solar system, the globe of Jupiter being equal in bulk to 1414 and that of Saturn to 772 of our Earth. Notwithstanding their great distance we are thus enabled to see, as before stated, that they are furnished with a qualification which cannot be perceived in the Moon, even with the best telescopes, and the indications of an atmosphere on those distant objects are many and various. This is best seen, however, by the fleeting nature of the *belts* on Jupiter, as the dark bands which lie parallel to the equator of that planet are termed. Sometimes as many as *forty* of those have been counted, but, in general, there are not above three or four visible at the same time. In May, 1859, nearly a dozen of those narrow dark streaks were thus visible. It does not always happen that they are continuous,—very frequently they are broken and interrupted, and always when a belt is about to disappear it breaks at one particular part, and the ends draw further and further apart, until, at last, it completely vanishes. The dark belts are not always of the same tint throughout, for we frequently perceive *darker* spots on them, and occasionally a number of bright specks will likewise make their appearance on them, as well as on other parts of the disc. In the last opposition Mr. Lassel noticed this latter phenomenon to great advantage, and the aspect of the planet, as will be seen by the Engravings, was very remarkable. That excellent observer had previously seen those bright spots, which were as bright and well defined as the disc of a satellite when seen through a small telescope. Mr. Dawes states that they bear some resemblance at first sight to the craters of the Moon. It need scarcely be remarked that the dusky zones and dark spots are now generally held to be portions of the real body of the planet; those parts of its surface which are brightest being surmised, from various considerations, to be the clouds and vapours which reflect a great quantity of light. The contrary opinion was originally held, the dark bands being conjectured to be either masses of black cloud or water on the surface of Jupiter. The quick rotation of the planet on its axis, which takes place in 9h. 55½m., tends to dispose the cloud and vapour in rows parallel to the equator, and their regularity and constancy are perhaps also due to the small change in the seasons, the great length of the year, and the gravity on the surface of Jupiter (nearly three times as great as that on the Earth), by which their motion is retarded, and they remain comparatively stationary. From the fact that the dusky belts become almost invisible at the margins of the planet, it is conjectured that the atmosphere is otherwise very dense. But sometimes spots on its surface have been observed to travel with tremendous velocity, and, according to Schroeter, they are sometimes carried on at the rate of 350 feet per second!

Similar bands are seen on the surface of Saturn, which remain even more constant than those on Jupiter, and are disposed in the same manner parallel to the equator of the planet. They can sometimes be followed up in regular series even to the poles, and have occasionally been seen forming a ring round that portion of the planet. They are, however, much fainter than those of Jupiter, and the dark and bright specks perceptible on the latter object have only been perceived on one or two occasions on Saturn. It will be seen by the Diagram that the ring of Saturn is becoming more narrow at each successive opposition. We give an Engraving from a drawing by Captain Jacob, of the Madras Observatory.

DONATI'S COMET.

(*See page* 68.)

THE present year has been remarkably barren both in the discoveries of planets and comets; up to the present time (September) not a single asteroid having been detected (the number discovered being on an average from four to five per annum for the last twelve years), whilst only one comet has been added to the list of those erratic bodies, of which eight appeared during the year 1858. The great comet of the latter year, which disappeared from sight in our latitudes at the middle of October, was observed in South America up to the beginning of March 1859, and, from those further observations by which its position is now well determined for nine months (it being discovered on June 2, 1858), a very accurate idea of its orbit and period may be expected, though its time of return is too remote to be of any immediate interest for some ages to come. Since the publication of the ILLUSTRATED ALMANACK for 1859 many interesting notices have been published in the English journals (see the ILLUSTRATED LONDON NEWS for October 23rd, 1858, &c.), and others of later date have been given in the foreign scientific journals. The most remarkable of the phenomena contained in the latter is an account of a distinct tail to the comet being seen, altogether separated from the large and brilliant one commonly observed, and which seems to have altogether escaped notice in this country. This was seen with the naked eye by M. Westphal in Germany, and by Mr. Bond in the United States. The drawing made by the latter astronomer is here given, from which it will be seen that the supplementary tail was quite straight, and of nearly uniform breadth. A large quantity of faint outlying nebulous matter was likewise perceived, attached to the brighter tail, which also escaped detection in this country, clear and dark as some of the nights were whilst the comet was visible.

SOLAR ECLIPSE OF JULY 18.

(*See page* 63.)

TOTAL eclipses of the Sun at any given place are of rare occurrence. On the average, in the space of eight years, which will contain ninety-nine new moons, there will happen eighteen solar eclipses on the surface of the Earth, and among those there will be three total and eight annular eclipses. But as the zone in which an eclipse can be total is only equal to the one-hundredth part of the surface of the earth, it follows that three centuries will elapse before another can happen at the same locality. And when we consider the numbers which are invisible on account of cloudy weather (among which may be reckoned the disappointment of the last great eclipse of March, 1858), those which are favourably seen are few indeed. In the Engraving at page 64, which represents the principal phenomena seen during the well-recorded eclipse of 1851, we see the red flames which have been noticed at the margin of the Sun, and which will doubtless be well seen in Spain and Africa during the present one. The inner portion of the corona which will remain visible, even when the disc of the Sun is entirely obscured, has been noticed as of a slightly yellow colour, and the light of the corona gradually fades to the exterior, where it is lost in long, faint, and irregular beams. The darkness is very great during the three or four minutes of total eclipse, and its abruptness has caused much terror and much ludicrous commotion among unenlightened nations in consequence. Thus we read of wells being covered up in order to prevent the failing poison which darkened the air from affecting them. Armies in battle array have sheathed their swords, and dispersed in dismay at the sudden darkness. The Chinese whipped their dogs in order that they might frighten the dragon, which hid the Sun, by their howling. And as ludicrous as the foregoing, but more lamentable, is the fact that even in Christian times these eclipses were attributed to the Jews, and the latter were persecuted accordingly.

When less than five-sixths of the solar disc is hid by the Moon, the darkness which occurs is not very noticeable to ordinary sight. So readily does the eye adapt itself to circumstances that even when only a slender thread of light remains (as in the case of the eclipse of March, 1858), the darkness is not so noticeable as might be expected, and the prognostications of astronomers on that point, and on that occasion, gave rise to some disappointment. The weather, however, being very dark and unfavourable at that time, the contrast was not so striking as it would otherwise have been, and might be compared to the difference of stepping from a darkened chamber to another still more dark, instead of passing from the open sunshine to the latter. On the present occasion, when at the time of greatest darkness, eighty-three-hundredths of the solar disc will be hid, the loss of light will be still less, although, if the day be fine, it may be more apparent, as this eclipse is still very considerable, and will be a very remarkable sight. The times of the beginning, greatest darkness, and end of the eclipse for London, Cambridge, Oxford, Liverpool, Edinburgh, and Dublin are as follows:—

	BEGINNING.	GREATEST DARKNESS.	END OF ECLIPSE.
London.. ..	July 18, 1h. 38m. P.M.	.. 2h. 48m. P.M.	.. 3h. 53m. P.M.
Cambridge..	„ 1 38 „	.. 2 47 „	.. 3 52 „
Oxford.. ..	„ 1 31 „	.. 2 41 „	.. 3 47 „
Liverpool ..	„ 1 20 „	.. 2 30 „	.. 3 36 „
Edinburgh..	„ 1 16 „	.. 2 25 „	.. 3 30 „
Dublin.. ..	„ 1 2 „	.. 2 14 „	.. 3 21 „

The times given are the mean times of the places mentioned. At Dublin the first and last contact will take place almost exactly at the right and left extremities of the Sun respectively, and the same is almost the case at Edinburgh. At Dublin the eclipse is a little more considerable than at other places. The eclipse will be total between the limits of the Bay of Biscay and the northern parts of Africa, and will be visible at the towns of Oviedo, St. Vincent, Santander, Bilbao, Vittoria, Burgos, Pampeluna, Saragossa, and Valencia, in SPAIN; and, in AFRICA, at Algiers, Beran, Tozer, Sockna, Sebba, Goddona, and Mourzuk. The duration of total darkness ranges between 3m. 41s. and 2m. 26s. in those places.

A full account of the phenomena which may be expected to occur at the moment of totality is given at the end of the ILLUSTRATED LONDON ALMANACK for 1858. A description of the great annular eclipse of the Sun on March 15, 1858, the phenomena of Baily's Beads, and the partial corona, &c., as seen by Mr. Breen with the Northumberland telescope of the Cambridge Observatory (the only locality near the central line of eclipse where the weather was at all favourable for observation), is given in the ILLUSTRATED LONDON NEWS of March 20, 1858; and at page 21 of the ILLUSTRATED ALMANACK for 1859. A Diagram at page 63 of the present Almanack shows the positions of first and last contact, and the magnitude of the eclipse as visible to the naked eye.

NOVEMBER.

SHOOTING.

Day of Mon	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Morn.	MOON. Sets at London. Morn.	MOON. Age.	HIGH WATER AT LONDON BRIDGE. Morn.	HIGH WATER AT LONDON BRIDGE. Aftern.	HIGH WATER AT LIVERPOOL DOCK. Morn.	HIGH WATER AT LIVERPOOL DOCK. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	Days	H. M.	H. M.	H. M.	H. M.
1	Th	All Saints	6 56	11 43 42	4 31	5 35	1 26	10 6	18	3 12	3 28	0 6	0 22
2	F	All Souls. Michaelmas T. begins.	6 58	11 43 42	4 29	6 29	2 19	11 5	19	3 44	4 2	0 40	0 59
3	S	Twilight ends 6h. 24m.	7 0	11 43 42	4 27	7 34	3 14	11 53	20	4 21	4 39	1 17	1 37
4	S	22ND S. aft. TRIN.	7 1	11 43 43	4 25	8 49	4 9	Aftern.	21	4 59	5 21	1 59	2 22
5	M	Battle of Inkerman, 1854	7 3	11 43 45	4 24	10 9	5 3	0 59	22	5 44	6 10	2 48	3 14
6	Tu	Giffard died, 1858	7 5	11 43 47	4 22	11 31	5 55	1 23	☾	6 36	7 8	3 46	4 22
7	W	Battle of Prague, 1620	7 7	11 43 51	4 20	Morn.	6 45	1 41	24	7 44	8 24	5 2	5 44
8	Th	Milton died, 1674	7 8	11 43 55	4 19	0 54	7 35	1 58	25	9 6	9 44	6 22	6 59
9	F	Prince of Wales born, 1841	7 10	11 44 1	4 17	2 19	8 25	2 15	26	10 21	10 57	7 35	8 6
10	S	Day breaks 5h. 13m.	7 12	11 44 7	4 16	3 44	9 16	2 33	27	11 28	11 54	8 32	8 57
11	S	23RD S. aft. TRIN.	7 14	11 44 14	4 14	5 14	10 10	2 54	28	—	0 19	9 21	9 46
12	M	Cambridge Michaelmas Term divides	7 15	11 44 22	4 13	6 44	11 7	3 22	29	0 43	1 8	10 10	10 33
13	Tu	Twilight ends 6h. 11m.	7 17	11 44 31	4 11	8 10	Aftern.	3 57	●	1 32	1 55	10 56	11 20
14	W		7 19	11 44 40	4 10	9 29	1 9	4 45	2	2 18	2 42	11 42	—
15	Th	*St. Machutus*	7 21	11 44 51	4 8	10 33	2 9	5 47	3	3 4	3 27	0 5	0 28
16	F	Lucknow relieved, 1857	7 22	11 45 2	4 7	11 21	3 7	6 58	4	3 50	4 12	0 50	1 12
17	S	Hugh, Bp. of Linc.	7 24	11 45 14	4 6	11 54	4 0	8 13	5	4 34	4 56	1 34	1 57
18	S	24ND S. aft. TRIN.	7 26	11 45 27	4 5	Aftern.	4 48	9 28	6	5 19	5 43	2 21	2 44
19	M	Day breaks 5h. 25m.	7 27	11 45 41	4 3	0 39	5 33	10 40	7	6 6	6 30	3 8	3 33
20	Tu	*Edm. K. and M.*	7 29	11 45 55	4 2	0 54	6 15	11 50	☽	6 55	7 23	4 1	4 32
21	W	Princess Royal born, 1840	7 31	11 46 11	4 1	1 7	6 56	Morn.	9	7 54	8 29	5 7	5 42
22	Th	Twilight ends 6h. 1m.	7 32	11 46 27	4 0	1 19	7 35	0 58	10	9 4	9 37	6 15	6 47
23	F	*Clement*	7 34	11 46 44	3 59	1 33	8 15	2 6	11	10 9	10 41	7 19	7 48
24	S	Peace with America, 1814	7 36	11 47 1	3 58	1 48	8 57	3 14	12	11 10	11 37	8 15	8 40
25	S	25TH S. aft. TRIN.	7 37	11 47 19	3 57	2 5	9 41	4 24	13	—	0 2	9 2	9 21
26	M	Michaelmas Terms ends	7 39	11 47 39	3 56	2 26	10 29	5 34	14	0 24	0 43	9 41	10 1
27	Tu	Pr. Mary Adel. born, 1833	7 40	11 47 58	3 55	2 55	11 19	6 47	15	1 3	1 23	10 20	10 37
28	W	Pr. of Asturias born, 1857	7 42	11 48 19	3 54	3 33	Morn.	7 56	○	1 42	1 59	10 56	11 14
29	Th	Day breaks 5h. 39m.	7 43	11 48 40	3 54	4 24	0 13	8 58	17	2 18	2 36	11 32	11 50
30	F	*St. Andrew*	7 45	11 49 2	3 53	5 26	1 9	9 50	18	2 54	3 12	—	0 8

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	9 15 M	1 11 A	5 7 A
	6	9 29	1 16	5 3
	11	9 34	1 16	4 58
	16	9 24	1 7	4 50
	21	8 52	0 44	4 36
	26	7 54	0 4	4 14
Venus.	1	2 46	9 4 M	3 21
	6	2 57	9 5	3 12
	11	3 10	9 7	3 3
	16	3 26	9 10	2 53
	21	3 37	9 12	2 46
	26	3 51	9 15	2 38
Mars.	1	2 10 A	6 39 A	11 9
	6	1 54	6 31	11 8
	11	1 39	6 23	11 8
	16	1 25	6 16	11 7
	21	1 10	6 8	11 6
	26	0 56	6 1	11 6
Jupiter.	1	11 45	7 5 M	2 21
	6	11 29	6 47	2 3
	11	11 12	6 30	1 45
	16	10 54	6 12	1 26
	21	10 37	5 53	1 6
	26	10 18	5 35	0 48
Saturn.	1	1 0 M	7 55	2 50
	6	0 43	7 37	2 31
	11	0 25	7 19	2 13
	16	0 8	7 1	1 54
	21	11 45 A	6 42	1 35
	26	11 28	6 23	1 15
Uranus.	1	5 47	1 57	10 3 M
	6	5 26	1 36	9 42
	11	5 6	1 16	9 22
	16	4 45	0 55	9 1
	21	4 25	0 35	8 41
	26	4 4	0 14	8 20

"MARRIED AND HAPPY." PAINTED BY B. OAKLEY.—FROM "THE ILLUSTRATED LONDON NEWS."

"Married and Happy." This is a theme which suggests a variety of reflections, according to the turn of mind of the party, and has been treated in a variety of ways by poets and artists. With the sentimentalists "the model husband" is a very neatly-dressed young man, reading a book to his wife and nursing a child on one arm, while with his foot he rocks the cradle containing the baby. Miserable old-fashioned bachelors sum up the blessings of married life in the one word "buttons." Mr. Oakley, with a soul above buttons, aims a dart at the helplessness of bachelor life from another point of view. "What's to become of you when you're ill, and nobody to nurse you?" cries the fiend; and dismal are the reflections conjured up in the too late repentant bosom. Contrast with them the picture before us, in which our hero may absolutely be said to be "enjoying bad health," or making the most of a temporary attack of illness. Look at the snug fireside, the snug arm-chair, the snug blanket tucked round the patient's knees, the wife's warm shawl gathered over his shoulders by her own affectionate hands; and, to crown all, that soothing basin of gruel—such as none but she can make—which has just been handed to him by the incomparable Mrs. Caudle, junior. Mr Oakley has treated with great spirit and clearness a subject the homely truth of which many will cheerfully and gratefully recognise.

NEBULA IN ANDROMEDA.

(*See page* 67.)

THE nebula in Andromeda is one of the very few few visible in the heavens with the naked eye, although it takes a pretty keen sight to catch a glimpse of it in this manner. With the telescope it appears to belong to the class of elliptic unresolvable nebulæ; the most conspicuous feature which it presents when viewed with a low power being the sudden condensation of light at the centre into an almost starlike nucleus: and, when examined with a higher power and a large object-glass. a vast number of stars of every gradation of brilliancy is perceived scattered over its surface, which has the undefinable but still convincing aspect of not being its components. Mr. Bond, who has examined it with the great Cambridge (U.S.) refracting telescope, with an object-glass of fifteen inches in diameter, estimated that above 1500 stars were visible with the full aperture within the limits of the nebula. With high powers minute stars are discovered on the borders of the nucleus, but it has thus far yielded no evidence of resolution. As a proof of the faintness of this object as visible to the unassisted vision we may remark that Simon Marius considered it to be a new object in 1612 (when he discovered it with the telescope), although there is positive proof that it was seen in the year A.D. 995. Marius describes it as being composed of rays of light. increasing in brightness as they approached the centre, which was marked by a dull pale light, similar to that of a candle at some distance shining through horn. This, indeed, is the best idea which can be formed of it even when seen through powerful telescopes, but the great telescope made use of by Mr. Bond discloses other interesting features. The sudden termination of the light of the nebula at the western boundary was found to be only apparent, the nebulosity itself stretching beyond this. When carefully examined this dark interruption appeared like an obscure band, in which no deviation from perfect straightness could be detected. Another similar dark band, or canal, equally regular but less distinct, was seen exterior to this, and appeared to be nearly parallel to the former. Both passed along the field of view in the direction of the greater axis of the nebulæ. Mr. Bond was particularly struck with the regularity which this nebula thus displayed:—"The uniform influence made manifest to the senses of the same law over an immensity of space of which the mind can form no adequate conception, since, from the distance at which Sir W. Herschel places this nebula, it would follow that the length of the interior canal should not be estimated at less than twenty times the distance of Sirius from the Sun." It may be mentioned that the Roman astronomers perceived one of those dark canals previous to Mr. Bond, and with a telescope of far inferior power. Mr. Bond describes the dark band nearest the nucleus as the longest and most distinct; it commences abruptly at the south-west of the nucleus, amidst a group of small stars, and for about half a degree its course is marked with great uniformity, being perfectly straight and well terminated, and its breadth being about a minute and a half. After passing the nucleus it diverges slightly to the east, and becomes fainter and less regular, and after it arrives at a degree in length it cannot be traced with certainty. The smaller can only be traced for a distance of forty minutes, and is sooner lost after passing the nucleus. The two canals are inclined to each other by an angle of about three degrees, the distance between them increasing to the north. In making further examinations of this remarkable nebula Mr. Bond found that the nucleus was situated nearly centrally in respect to the greatest body of light, and fully agreed with the description given by Sir J. Herschel. In making use of high powers he was able to detect minute stars on its borders, but no signs of resolution could be perceived in it, and the number of stars visible in the same field with the nucleus was less than at any other equal surface of the nebulosity. It was likewise perceived that the portion of the nebula to the south-west of the nucleus was brighter at the opposite side (as had already been noticed by Admiral Smyth), and that the axis of the nebula, which is for the most part strongly marked, bears a striking resemblance to the Milky Way as seen by the naked eye, both as to its structure, and the number and disposition of the stars in it; and the comparison gives an accurate idea of its appearance when seen most favourably.

MARS.

(*See page* 66.)

THE planet Mars again comes into opposition during the present year, but is so badly situated for an observer in those northerly latitudes that but few favourable opportunities for examining the spots and other phenomena on its disc can be promised. When nearest to the Earth at the middle of July, it is only about ten degrees above the horizon at the time of culmination, and is not much better situated during the summer and autumn months, when only it is worth examination. This is the more to be regretted as the planet now arrives at nearly its minimum distance from the Earth, which only happens at intervals of about fifteen years, as in 1830, 1845, 1860, &c. At those periods its apparent diameter may increase to 23½ seconds (during the present opposition it amounts to 22 6-10ths seconds); at other oppositions its diameter is not greater than 13 seconds, and at times of conjunction it does not sometimes present a disc larger than that of the planet Neptune, or about 3 seconds.

The representation of MARS here given is from a drawing by M. Secchi at Rome, which was taken at the last opposition of 1858. The general colour of the planet was of a tawny tint, inclining in some parts to a red, similar to that of the deep-coloured sandstones. Whether by contrast or not, the darker spots and streaks appeared of a bluish tint, and were different in this respect from the dusky bands of Jupiter. In strong contrast with both were the white snows at the poles of the planet, which are by far the brightest parts of the disc, and remain visible like stellar points, when all the other portions of the planet are obscured by clouds not too dense to obliterate the brighter stars. The bright red colour has been occasionally noticed by the indefatigable observers Beer and Maedler, who have paid great attention to this object, particularly in the favourable opposition of 1830. On that occasion they noticed the great distinctness of the boundaries of the spots, although it was perceived that changes were going on from time to time in this respect which were believed to be due to the atmospheric changes of the planet itself. When the summer season takes place on Mars, and when we may presume the atmosphere to be clearest and most dry, the spots are very well defined and sharp: in the winter season, on the contrary, they are faint, indefinite, and blurrish. Another proof of the existence of an atmosphere is, that when the spots by the rotation of the planet on its axis pass towards the margin they become much dimmer than they were at the centre, sometimes wholly disappearing. This can readily be understood if the greater thickness of the atmosphere at the margins is taken into account, and is explained in exactly the same manner as we perceive stars at the zenith during a fog, whilst they are invisible at lesser altitudes, looking in the former case through the thinnest portion of the stratum of fog and in the latter viewing it obliquely.

The great object of attraction in this planet is, however, the snow zones, and the remarkable changes which take place in their dimensions according as summer is progressing to or receding from the poles. This of itself is sufficient evidence of the existence of an atmosphere in which all the changes of wind, rain, snow, &c., are carried on, and where the effects of the winds are sometimes seen from the change in the positions of the cloudy parts. This snow zone sometimes extends to nearly fifty degrees of latitude, answering to the position of the British Islands, all that part of the planet comprised within forty degrees from the pole being hid with snow for nearly three hundred days. It has been noticed that the southern pole of Mars is that in which the winter appears to be most severe. which is accordant to theory. By taking notice of any well-defined spot on the disc during the present opposition, the telescopic observer will perceive that it will gradually change its position from the rotation of the planet, but will return to the first observed place in 24h. 37m. 20s., the length of the day in this planet.

ASTRONOMICAL OCCURRENCES.

JANUARY.

THE SUN was at its shortest distance from the Earth at 9h. 8m. P.M. of January 2. It is situated south of the Equator, and has been moving northward since December 22, 1859. It passes from the sign of Capricornus to that of Aquarius, at 6h. 38m. P.M. of the 20th. An Eclipse of the Sun occurs on the 22nd, which is invisible at Greenwich.

The MOON is five degrees north of Uranus at 5 P.M of the 5th; one degree and a half north of Jupiter at 8 P.M. of the 8th, three degrees south of Saturn at 5 A.M. of the 11th, six degrees south of Mars on the morning of the 17th, two degrees south of Mercury on the morning of the 21st, and four degrees north of Venus at 7 P.M of the 25th. It is nearest to the Earth at 3 A.M. of the 10th, and most distant from it at 5 P.M. of the 25th.

Full Moon occurs at	23 minutes	past 3	on the afternoon of the 8th.
Last Quarter	,, 58	,,	6 on the morning of the 15th.
New Moon	,, 17	,,	midnight of the 22nd.
First Quarter	,, 11	,,	5 on the morning of the 31st.

MERCURY is visible during the mornings of this month, rising shortly after six o'clock on January 1, but is very low down in the south. It is in the constellation of Ophiuchus at the beginning of the month, and passes through that of Sagittarius to Capricornus, where it is situated on January 31. It is at its greatest westerly elongation on the morning of January 4, is a little to the north of the Moon on the morning of January 31, and at its greatest distance from the Sun on the afternoon of the 26th.

VENUS is situated in the constellation of Capricornus at the beginning, and in that of Aquarius at the end, of the month As it is now beyond the Sun it appears of small dimensions, and its disc is nearly round. It is situated about four degrees south of the Moon on the evening of the 25th

MARS is now visible in the morning in the S.E., but is faint and badly situated for observation. It is in the constellation of Libra at the beginning of the month, and in that of Scorpio at the end of the month. On the evening of the 6th it is eight minutes (of time) to the east of the principal star in Libra, and on the morning of the 31st it is a little to the west of Beta Scorpii. It is to the north of the Moon on the morning of the 17th.

JUPITER is now a glorious object, coming into opposition and arriving at its greatest brightness on the morning of January 11, and being otherwise favourably situated for observation. It is situated in the constellation of Gemini throughout the month, the principal stars in that group (Procyon and Pollux) being situated directly to the north of it. At 7h. 41m. P.M. of the 8th it is about one degree and a half south of the Moon.

SATURN is now visible throughout the whole night, and is a very conspicuous object, from its dull yellow light in the constellation of Leo, being situated about two degrees to the north of the principal star (Regulus) of that group. It is a little to the north of the Moon on the morning of the 11th.

URANUS is visible throughout the night in the constellation of Taurus, a little above the group of the Hyades, and is conveniently situated for observation during the evenings. The Moon passes five degrees to the north of Uranus at 4h 42m. P.M. of the 5th.

ECLIPSES OF JUPITER'S SATELLITES.—Disappearance of fourth satellite. Jan. 1, at 7h. 39m 10s. P.M.; January 4th, at 7h. 34m. morn., disappearance of first satellite; January 6th, 2h. 2m. 54s. A.M., disappearance of first satellite; January 6th, 8h. 54m. 33s. P.M., disappearance of third satellite; January 7th, 8h. 31m. 25s. P.M., disappearance of first satellite; January 8th, 3h. 5m. 33s. A.M., disappearance of second satellite; January 13th, 6h. 11m. 3s. A.M., reappearance of first satellite; January 14th. 4h. 10m. 28s. A.M., reappearance of third satellite; January 15th, 0h. 39m. 38s. A.M., reappearance of first satellite; January 16th. 7h. 8m. 11s. P.M., reappearance of first satellite; January 18th, 5h. 18m. 13s. P.M., reappearance of fourth satellite; January 18th, 9h. 44m. 34s. P.M., reappearance of second satellite; January 22nd, 2h. 34m. 2s. A.M. reappearance of first satellite; January 23rd, 9h. 2m. 37s. P.M., reappearance of first satellite; January 26th, 0h. 21m. 13s. A.M., reappearance of second satellite; January 29th, 4h. 28m. 35s. A.M., reappearance of first satellite; January 30th, 10h. 57m. 12s. P.M., reappearance of first satellite.

FEBRUARY.

THE SUN passes from the sign of Aquarius to that of Pisces at 9h. 15m. A.M. of the 19th. It is situated south of the Equator, and moving northward.

The MOON is five degrees north of Uranus at two hours after midnight of the 1st, two degrees north of Jupiter at 1h. 30m. A.M. of the 5th, three degrees south of Saturn at 0h. 33m. P.M. of the 7th; five degrees south of Mars at 11 P.M. of the 14th, four degrees north of Mercury at 4 A.M. of the 22nd, five degrees north of Venus at 6 A.M. of the 25th, and five degrees north of Uranus at 9h. 32m. A.M. of the 29th. An Eclipse of the Moon occurs on the 6th, which is invisible at Greenwich. It passes over a few of the stars of the Pleiades on the evening of the 28th. It is nearest to the Earth at 2 P.M. of the 7th, and most distant from it at 9 P.M. of the 21st.

Full Moon occurs at	35 minutes	past 2	on the morning of the 7th.
Last Quarter	,, 50	,,	6 on the afternoon of the 13th.
New Moon	,, 39	,,	7 on the afternoon of the 21st.
First Quarter	,, 55	,,	7 on the afternoon of the 29th.

MERCURY is in superior conjunction to the Sun on the afternoon of the 19th, and a little to the south of the Moon on the morning of the 22nd. It is unfavourably situated for observation in northerly latitudes throughout this month. It is situated in the constellation of Capricornus at the beginning, and in that of Aquarius at the end, of the month.

VENUS is situated in the constellation of Aquarius at the beginning, and in that of Pisces at the end, of the month. Its disc is now perceived to be gibbous, but it still remains badly situated for observation. It is five degrees and a half south of the Moon on the morning of the 25th.

MARS is situated in the constellation of Scorpio at the beginning of the month, and in the milky way in the constellation of Ophiuchus at the end of the month, but is badly situated for observation. It is visible during the early mornings in the S.E. and S. It is a little to the east of Omega Scorpii on the evening of the 6th, close to Omega Ophiuchi, between the 12th and 14th, and to the north of the Moon on the night of the 14th.

JUPITER remains in the constellation of Gemini throughout this month, and below the stars Castor and Pollux. It is the most brilliant object in that part of the sky, and well situated for observation. At 1h. 30m. A.M. of the 5th it is situated about two degrees to the south of the Moon.

SATURN is now visible throughout the whole night. It remains in the constellation of Leo throughout the month, being situated a little to the north and west of the principal star Regulus of that group. It arrives in opposition, and is most favourably situated for observation on the night of the 11th. The Moon passes a little to the south of it on the afternoon of the 7th.

URANUS continues favourably situated for observation during this month. It is situated in the constellation of Taurus, a little above the group of the Hyades. The Moon passes five degrees north of Uranus at 1h. 40m. A.M. of the 2nd, and at 9h. 32m. A.M. of the 29th. It is stationary on the 10th, and comes into quadrature with the Sun on the morning of the 23rd.

ECLIPSES OF JUPITER'S SATELLITES.—February 1st, 5h. 25m. 56s. P.M., reappearance of first satellite; February 2nd, 2h. 57m. 49s. A.M., reappearance of second satellite; February 7th, 0h. 51m. 57s. A.M., reappearance of first satellite; February 8th, 7h. 20m. 42s. P.M., reappearance of first satellite; February 9th, 5h. 34m. 22s. A.M., reappearance of second satellite; February 11th, 8h. 9m. 54s. P.M., reappearance of third satellite; February 12th, 6h. 52m. 24s. P.M., reappearance of second satellite; February 14th, 2h. 46m. 49s. A.M., reappearance of first satellite; February 15th, 9h. 15m. 37s P.M., reappearance of first satellite; February 18th, 8h. 50m. 23s. P.M., disappearance of third satellite; February 19th, 0h. 10m. 8s. A.M., reappearance of third satellite; February 19th, 9h. 28m. 53s P.M., reappearance of second satellite; February 21st. 1h. 45m. 40s. A.M., disappearance of fourth satellite; February 21st, 4h. 41m. 49s. A.M., reappearance of first satellite; February 22nd, 11h. 10m. 39s. P.M., reappearance of first satellite; February 24th, 5h. 39m. 23s. P.M., reappearance of first satellite; February 26th, 0h. 50m. 5s. A.M., disappearance of the third satellite; February 26th, 4h. 10m. 28s. A.M. reappearance of the third satellite; February 27th, 0h. 5m. 17s. A.M., reappearance of second satellite.

MARCH.

THE SUN is situated south of the Equator, and in the sign of Pisces, until 9h. 5m. A.M. of the 20th, when it passes into the sign of Aries, and is then north of the Equator.

The MOON is a little to the north of Jupiter at 8h. 37m. A.M. of the 3rd; to the south of Saturn at 8h. 29m. P.M. of the 5th, to the south of Mars at 11h. 39m. A.M. of the 14th, to the north of Mercury at 11h. 3m. P.M. of the 23rd, to the north of Venus at 7h. 19m. A.M. of the 26th, to the north of Uranus at 4h. 38m. P.M. of the 27th, and to the north of Jupiter at 5h. 5m. P.M. of the 30th. It is nearest to the Earth at 2 A.M. of the 7th, and most distant from it at 1 A.M. of the 20th.

Full Moon occurs at	44	minutes past	noon of the 7th.
Last Quarter	,, 8	,,	9 on the morning of the 14th.
New Moon	,, 56	,,	1 on the afternoon of the 22nd.
First Quarter	,, 52	,,	6 on the morning of the 30th.

MERCURY is favourably situated for observation about the middle of the month. It is at its shortest distance from the Sun on the afternoon of the 10th, at its greatest easterly elongation on the morning of the 16th, and is stationary on the evening of the 23rd. It is a little to the south of the Moon on the night of the 23rd. It is in the sign of Pisces throughout the month.

VENUS is situated in the constellation of Pisces at the beginning, and in that of Aries and Taurus at the end, of the month. It is now a very conspicuous object in the west during the evenings, not setting until after 10 P.M. at the end of the month. It is a little to the south of the Moon when rising on the morning of the 26th, and is a little to the east of Delta Arietis when setting on the evening of the 28th. The phase it now exhibits resembles that of the Moon when ten days old.

MARS is situated in the constellation of Ophiuchus in a branch of the milky way at the beginning, and in that of Sagittarus at the end, of the month. It is visible in the S.E. after 3 A.M., and is increasing in size and brightness. It is a little to the north of the Moon on the morning of the 14th, and in quadrature with the Sun on the night of the 16th.

JUPITER remains visible throughout the evenings and nights of this month, but has slightly waned in lustre since January. It is situated a little to the south of the Moon on the morning of the 3rd, and is again about three diameters of the Moon to the south of it at 5h. 5m. P.M. of the 30th. It is stationary at midnight of the 10th. It remains in the constellation of Gemini during this month.

SATURN remains visible during the whole of the evenings and nights of this month, not setting until after daybreak, and is favourably situated for observation. It continues a little to the north and west of the principal star of the constellation of Leo. The Moon passes two degrees and a half to the south of this planet at 8h. 29m. P.M. of the 5th.

URANUS continues visible during the evenings, setting shortly before midnight on the latter days of the month. It remains in the constellation of Taurus during March. The Moon passes about five degrees north of Uranus at 4h. 38m. P.M. of the 27th.

ECLIPSES OF JUPITER'S SATELLITES.—March 1st, 1h. 5m. 47s. A.M., reappearance of first satellite; March 2nd, 7h. 34m. 33s. P.M., reappearance of first satellite; March 5th, 2h. 41m. 34s. A.M., reappearance of second satellite; March 8th, 3h. 1m. 1s. A.M., reappearance of first satellite; March 8th, 7h. 48m. 48s. P.M., disappearance of fourth satellite; March 8th, 11h. 46m. 15s. P.M., reappearance of fourth satellite; March 9th, 9h. 29m. 49s. P.M., reappearance of first satellite; March 15th, 6h. 35m. 54s. P.M., reappearance of second satellite; March 16th, 11h. 25m. 9s. P.M., reappearance of first satellite; March 22nd, 9h. 11m. 52s. P.M., reappearance of second satellite; March 24th, 1h. 20m. 33s. A.M., reappearance of first satellite; March 25th, 7h. 49m. 26s. P.M., reappearance of first satellite; March 25th, 8h. 12m. 54s. P.M., reappearance of third satellite; March 29th, 11h. 47m. 44s. P.M., reappearance of second satellite.

APRIL.

THE SUN is north of the Equator during this month, and remains in the sign of Aries until 9h. 9m. P.M. of the 19th, when it passes into that of Taurus.

The MOON is a little to the south of Saturn at 3h. 46m. A.M. of the 2nd, to the south of Mars at midnight of the 11th, to the north of Mercury at 10h. 47m. A.M. of the 19th, to the north of Uranus at 20 minutes past midnight of the 23rd, to the north of Venus at the same hour of the 24th, to the north of Jupiter at 3h. 31m. A.M. of the 27th, and to the south of Saturn at 10h. 27m. A.M. of the 29th. It is at its shortest distance from the Earth at noon of the 4th, and at its greatest distance at 3 P.M. of the 16th.

Full Moon occurs at	59	minutes past	9 on the evening of the 5th.
Last Quarter	,, 34	,,	1 on the morning of the 13th.
New Moon	,, 45	,,	5 on the morning of the 21st.
First Quarter	,, 36	,,	2 on the afternoon of the 28th.

MERCURY is in the constellation of Pisces during this month, and is favourably situated for observation at the end of the month. It is in inferior conjunction to the Sun on the night of the 2nd, is stationary on the morning of the 15th, is in Aphelion on the 23rd, and at its greatest westerly elongation on the evening of the 30th. It is situated six degrees south of the Moon on the morning of the 19th.

VENUS remains in the constellation of Taurus throughout this month, and is a very conspicuous object during the evenings, becoming brighter on each successive day, and presenting for the next three or four months a very favourable opportunity for telescopic examination. It is in Perihelion on the afternoon of the 5th, two degrees and a half north of Uranus on the night of the 11th, and a little to the south of the Moon on the night of the 24th.

MARS continues in the constellation of Sagittarius during this month, and, although badly situated for observation, is seen to increase visibly in brightness. It remains visible for two or three hours before twilight. It is situated a little to the north of the Moon on the night of the 11th.

JUPITER remains visible throughout this month during the evenings, and does not set until an hour after midnight on the 30th of April. It arrives in quadrature with the Sun on the afternoon of the 5th, and is becoming perceptibly fainter. It continues a conspicuous object in the constellation of Gemini throughout the month. It is situated a little to the south of the Moon on the night of the 26th.

SATURN is visible during the greater part of the night, remaining so until nearly daybreak at the latter part of the month. It continues a little to the north, and to the west of the principal star in Leo. The Moon passes two and half degrees to the south of Saturn, at 3h. 46m. A.M. of the 2nd, and on the forenoon of the 29th. It arrives at its stationary point shortly after noon of the 20th.

URANUS now sets shortly after twilight, and is unfavourably situated for observation. It is still in the constellation of Taurus, and is near the Moon on the night of the 23rd.

ECLIPSES OF JUPITER'S SATELLITES.—April 1st, 8h. 49m. 45s. P.M., disappearance of third satellite: April 1st, 9h. 44m. 54s. P.M. reappearance of first satellite; April 2nd, 0h. 13m. 8s. A.M., reappearance of third satellite: April 6th, 2h. 23m. 27s. A.M., reappearance of second satellite; April 8th, 11h. 40m. 22s. P.M., reappearance of first satellite; April 9th, 0h. 49m. 47s. A.M., disappearance of third satellite; April 16th, 1h. 35m. 52s. A.M., reappearance of first satellite; April 17th, 8h. 4m. 41s. P.M., reappearance of first satellite; April 23rd, 8h. 52m. 10s. P.M., reappearance of second satellite; April 24th, 10h. 0m. 11s. P.M., reappearance of first satellite; April 30th, 11h. 27m. 26s. P.M., reappearance of second satellite.

MAY.

THE SUN is north of the Equator, and remains in the sign of Taurus until 9h. 13m. P.M. of the 20th, when it passes into the sign of Gemini.

The MOON is a little to the north of Mars at 8h. 52m. A.M. of the 10th, to the north of Mercury at 8h. 52m. A.M. of the 19th, to the north of Uranus at 9h. 46m. A.M. of the 21st, to the south of Venus at 8h. 38m. A.M. of the 24th, to the north of Jupiter at 4h. 44m. P.M. of the 24th, and to the south of Saturn at 5h. 54m. P.M. of the 26th. It occults Jupiter on the afternoon of the 24th, and the planet is hid between 4h. 34m. P.M. and 5h. 47m. P.M. (Vide diagram.) It is at its shortest distance from the Earth at 11 A.M. of the 2nd, and at 3 A.M. of the 29th, and at its greatest distance from the Earth at 9 A.M. of the 14th.

Full Moon occurs at	2	minutes past	7 on the morning of the 5th.
Last Quarter	,, 16	,,	7 on the afternoon of the 12th.
New Moon	,, 46	,,	6 on the afternoon of the 20th.
First Quarter	,, 4	,,	8 on the evening of the 27th.

MERCURY is a morning star and is favourably situated for observation during this month. It is seven and a half degrees south of the Moon on the morning of the 19th. It passes from the constellation of Pisces to that of Aries, and finally to that of Taurus, and is a little to the north of the Hyades at the latter part of the month.

VENUS is now the evening star, and a very brilliant and conspicuous object in the western heavens during the evening and night, not setting until shortly before midnight. It passes from the constellation of Taurus to that of Gemini during this month. It is at its greatest easterly elongation at 7h. 23m. P.M. of the 9th, a little to the north of the Moon on the morning of the 24th, a little to the west of Kappa Geminorum on the afternoon of the 27th, and two degrees and a quarter to the north of Jupiter on the night of the 31st. Its phase at the beginning of May resembles that of the Moon when half full.

MARS is situated in the constellation of Sagittarius at the beginning, and between those of Sagittarius and Capricornus at the end, of the month, when it rises shortly before midnight. It is a little to the south of the Moon on the morning of the 9th.

JUPITER now shares with Venus the distinction of being the evening star, although considerably fainter than the latter luminary. It is situated a little to the south of the Moon at 4h. 44m. P.M. of

(*Continued on page* 61.)

DECEMBER.

BRENTFORD LOCK.

Day of Month	Day of Week	ANNIVERSARIES, FESTIVALS, REMARKABLE EVENTS.	SUN. Rises at London.	SUN. Souths.	SUN. Sets at London.	MOON. Rises at London. Aftern.	MOON. Souths. Morn.	MOON. Sets at London. Morn.	MOON. Age.	HIGH WATER AT LONDON BRIDGE. Morn.	HIGH WATER AT LONDON BRIDGE. Aftern.	HIGH WATER AT LIVERPOOL DOCK. Morn.	HIGH WATER AT LIVERPOOL DOCK. Aftern.
			H. M.	H. M. S.	H. M.	H. M.	H. M.	H. M.	DYS	H. M.	H. M.	H. M.	H. M.
1	S	Day breaks 5h. 41m.	7 46	11 49 25	3 52	6 46	2 5	10 31	19	3 30	3 50	0 28	0 49
2	S	1st S. in ADVENT	7 48	11 49 48	3 52	7 59	2 59	11 3	20	4 11	4 32	1 10	1 31
3	M	[Coup d'Etat, 1852	7 49	11 50 12	3 51	9 19	3 52	11 27	21	4 53	5 14	1 52	2 15
4	Tu	Richelieu died, 1642	7 50	11 50 36	3 51	10 42	4 42	11 47	22	5 37	6 2	2 40	3 5
5	W		7 52	11 51 1	3 50	Morn.	5 31	Aftern.	☾	6 27	6 53	3 31	4 1
6	Th	*St. Nicholas*	7 53	11 51 27	3 50	0 4	6 20	0 20	24	7 23	7 56	4 34	5 8
7	F	Father Mathew died, 1856	7 54	11 51 53	3 50	1 26	7 9	0 37	25	8 30	9 6	5 44	6 19
8	S	Conc. B. V. Mary	7 55	11 52 19	3 49	2 50	8 0	0 55	26	9 41	10 16	6 54	7 29
9	S	2nd S. in ADVENT	7 56	11 52 46	3 49	4 17	8 53	1 20	27	10 51	11 23	8 1	8 31
10	M	Dr. Livingstone arr., 1856	7 57	11 53 14	3 49	5 43	9 51	1 51	28	11 53	—	9 0	9 29
11	Tu	Day breaks 5h. 54m.	7 58	11 53 42	3 49	7 5	10 50	2 32	29	0 22	0 51	9 57	10 23
12	W	Twilight ends 5h. 55m.	7 59	11 54 10	3 49	8 15	11 51	3 27	●	1 19	1 45	10 47	11 10
13	Th	*St. Lucy*	8 0	11 54 38	3 49	9 9	Aftern.	4 35	1	2 9	2 32	11 33	11 56
14	F	Washington died, 1799	8 1	11 55 7	3 49	9 50	1 46	5 50	2	2 55	3 18	—	0 17
15	S	Isaac Walton died, 1683	8 2	11 55 37	3 49	10 20	2 38	7 7	3	3 39	4 0	0 38	0 58
16	S	3rd S. in ADVENT	8 3	11 56 6	3 49	10 41	3 25	8 21	4	4 20	4 40	1 18	1 40
17	M	Oxford Michaelmas Term ends	8 4	11 56 36	3 49	10 58	4 9	9 33	5	5 2	5 23	2 1	2 20
18	Tu		8 4	11 57 5	3 50	11 13	4 51	10 43	6	5 42	6 2	2 40	2 59
19	W	Day breaks 6h. 59m.	8 5	11 57 35	3 50	11 26	5 31	11 51	7	6 21	6 41	3 19	3 41
20	Th	Louis Napoleon proclaimed, 1848	8 6	11 58 5	3 50	11 39	6 11	Morn.	☽	7 3	7 26	4 4	4 28
21	F	*St. Thomas*	8 6	11 58 35	3 51	11 52	6 52	0 58	9	7 50	8 17	4 55	5 27
22	S	Twilight ends 5h. 58m.	8 7	11 59 5	3 51	Aftern.	7 34	2 7	10	8 49	9 21	5 59	6 33
23	S	4th S. in ADVENT	8 7	11 59 35	3 52	0 28	8 20	3 18	11	9 55	10 28	7 6	7 39
24	M	Christmas Eve	8 7	12 0 5	3 53	0 53	9 9	4 29	12	11 1	11 33	8 11	8 41
25	Tu	CHRISTMAS DAY	8 8	12 0 35	3 53	1 28	10 2	5 39	13	—	0 3	9 7	9 31
26	W	*St. Stephen*	8 8	12 1 4	3 54	2 12	10 58	6 45	14	0 29	0 53	9 53	10 15
27	Th	*St. John Evang.*	8 8	12 1 34	3 55	3 11	11 55	7 43	15	1 15	1 37	10 37	10 59
28	F	*Innocents*	8 8	12 2 3	3 56	4 23	Morn.	8 29	○	1 59	2 21	11 20	11 40
29	S	Thomas à Becket assass., 1171	8 8	12 2 32	3 57	5 42	0 51	9 4	17	2 42	3 2	—	0 1
30	S	1st S. aft. CHR.	8 8	12 3 1	3 58	7 5	1 46	9 32	18	3 23	3 43	0 21	0 42
31	M	*Silvester*	8 8	12 3 30	3 59	8 28	2 38	9 52	19	4 4	4 24	1 2	1 22

PLANETS.	Day of M.	Rise.	South.	Set.
		H. M.	H. M.	H. M.
Mercury.	1	6 56 M	11 18 M	3 40 A
	6	6 14	10 45	3 16
	11	6 0	10 29	2 58
	16	6 6	10 26	2 46
	21	6 18	10 29	2 39
	26	6 36	10 37	2 37
Venus.	1	4 6	9 18	2 29
	6	4 20	9 22	2 23
	11	4 37	9 26	2 14
	16	4 48	9 30	2 11
	21	5 4	9 35	2 5
	26	5 20	9 41	2 2
Mars.	1	0 42 A	5 53 A	11 6
	6	0 26	5 46	11 7
	11	0 11	5 38	11 6
	16	11 57 M	5 31	11 6
	21	11 43	5 24	11 6
	26	11 27	5 16	11 6
Jupiter.	1	10 0 A	5 16 M	0 28
	6	9 41	4 57	0 9
	11	9 22	4 38	11 50 M
	16	9 2	4 18	11 30
	21	8 41	3 58	11 11
	26	8 21	3 38	10 51
Saturn.	1	11 9	6 4	0 56 A
	6	10 50	5 45	0 37
	11	10 31	5 26	0 17
	16	10 12	5 7	11 59 M
	21	9 51	4 47	11 39
	26	9 31	4 27	11 19
Uranus.	1	3 45	11 50 A	7 59
	6	3 24	11 29	7 38
	11	3 4	11 9	7 18
	16	2 43	10 48	6 57
	21	2 22	10 27	6 37
	26	2 2	10 7	6 16

"SLY BOOTS." PAINTED BY C. H. WEIGALL.—FROM "THE ILLUSTRATED LONDON NEWS"

WHAT Sly Boots is thinking about we do not pretend to say; but, musing intently, with finger to her mouth, she is evidently "up to something" out of the common. This figure especially pleases us by the easy *abandon* of its pose leaning with one hand resting on the village stile; and for the admirable negligée of its toilet. The bonnet, battered, shapeless, and untied, is in itself a perfect study, the very bonnet for a young lady in a brown study. The landscape in which this small specimen of humanity is placed is simple, but full of rustic beauty; the entire arrangement affording a fine opportunity for an agreeable variety and harmony of colour, which the artist has turned to good account.

BRITISH INSECTS AND BUTTERFLIES.

NOVEMBER AND DECEMBER.

It is November. The sere and yellow leaves are falling in showers from the trees. A few hardy flowers still enliven the garden. The barberry-bush hangs out its pendent berries, waxlike and coral red. The holly and the yew look fresh, and green is the dense privet hedge, loaded with clusters of jet-like berries.

To the entomologist a fine old privet hedge is ever attractive. Numerous are the species of insects whose eggs or pupæ are to be found sheltered by its compact foliage. It is there, too, that we may find the cocoons of the diadem garden spider (*Epeira diadema*), which, as we have previously stated, endure through the winter, the eggs becoming hatched in the ensuing May.

We have already noticed the elegant nets of the female of this spider in autumn; but as November advances they no longer invite our inspection. The skilful weaver has wrought her last work, her eggs are laid, the envelope of soft silk is spun around them; she has accomplished her task, and has only to die.

> So generations in their turn decay,
> So flourish these when those have pass'd away.

But where are the hive-bees,—those assiduous labourers which, during the months of spring, summer, and even a great portion of autumn have been toiling day after day, early and late, without intermission? We pass a row of hives, but we hear no murmur proceeding from them; we see no crowd about the entrance of their domicile; none are issuing forth, none are returning; all is silent. It would seem as if the angel of desolation had passed over a once populous and busy city, leaving its once crowded streets unthronged, untrodden.

Let us descend to a few not uninteresting particulars concerning those extraordinary insects, whose hexagonal cells and mathematical acquirements have employed the pens of the greatest philosophers.

A hive of bees in a state of tranquillity consists of eggs and larvæ or pupæ in different stages of advancement, and, besides these, of a dominant female, called the queen of neuters or workers (really undeveloped females); and, lastly, of weaponless males, or drones, the number of which is limited.

Dr. Bevan assures us that the average life of the drone is about four months, that of the worker being extended to about six months, or little more. On the other hand, the life of the queen bee is extended to four or even five years. (See *Mag. of Zoology and Botany* i., p. 57). Kirby says that the queen will live for more than two years, and we suspect this to be its average duration of existence. If we call to mind that the gravid female is to be regarded as the source whence all population originates, and that in swarming the old female leads the way, and becomes the founder of several colonies in succession, the comparatively long duration of life of the female ceases to surprise. According to Réaumur, whose experiments on bees and their apiaries are entitled to our fullest confidence, mere want of room is not the cause of the emigration of swarms from a given hive. No doubt the hive is cleared by such a procedure, but this is not the primary result aimed at. Other considerations apart, the migration of swarms is evidently Nature's plan for the extension of the colonies of this insect, and we cannot doubt that an instinctive feeling urges them to the accomplishment of a wise purpose.

Of a hive of bees, whose winged population amounts to twelve or twenty thousand individuals, with a dominant queen, the number of the drones amount to several hundreds, the bulk of the population consisting of workers. The tale of the drones is soon told. The eggs which produce these drones are laid in April or May. In a short time their utility ceases, and in July and August they are stung to death by the workers. A pitiless massacre is not a pleasant picture, and may serve, perhaps, to lower the character of the industrious worker in our estimation. We confess, indeed, that there is something mysterious in the whole affair. Surely their food is not grudged them; though, to speak the truth, the workers are of a saving turn, and the very structure of their elaborate cells indicates an impulse to economise space, and the means of hoarding to the fullest within that space. Can any quarrel have arisen? The drones (or males) are not litigious, and have no rapiers to draw, even had they among them Capulets or Montagues to head a faction. The motive, in fact, which actuates the conduct of the workers (or neuters) to this onslaught has been often discussed, but not thoroughly cleared up; for it appears that in hives deprived by accident of a queen they remain unmolested, and the observation also applies to those rare cases in which the queen lays only male eggs.

By way of note it may be stated that a queen who does not give promise of eggs until the twenty-eighth day of her existence is passed lays male eggs only. Under ordinary circumstances, the gravid female begins far earlier to lay eggs producing workers, and continues to lay such solely for the next several months, and afterwards she commences laying male eggs, often delaying till the spring. The female in full activity lays about 200 eggs a day, or about 12,000 (a swarm) in two months.

But what becomes of the workers? Their fate is at hand; they perish as winter sets in, leaving however a certain number of survivors (the individuals of a late brood) which take refuge in the hive, ready on the cheering warmth of spring to exert all their energies in behalf of the queen. Of 12,000 workers, the unmolested hive will contain in winter but a few hundreds. The following is Dr. Bevan's calculation:—

Number of bees forming the complement of a hive in February	3000
Spring-bred bees (workers)	17,000
Summer and autumn bred bees	6000
	26,000
Removed by death between February and December ..	23,000
Thus bringing the family down to the February number	3000

It would seem that bees, though confined to the hive, do not pass the winter season in a state of torpidity; there are indoor duties which devolve upon a portion at least of the workers, for the larvæ, or bee grubs, with which so many cells are tenanted (each cell having its own occupant), require to be tended. It may be here observed that the workers or neuters, according to the observations of rigid investigators, are themselves divided into two classes—small nurse-bees and large wax-workers, whose duty it is during spring and summer to collect wax, honey, propolis, and bee-bread. One party modifies and assists in constructing the combs, tending and feeding the young; the other party labours in the fields and flower-gardens, bringing in stores of honey and wax, bee-bread and propolis. Propolis is a vegetable varnish, prepared from the resinous gummy, or glutinous secretion of the leaves and buds of various trees or shrubs, such as the tacamahaca (*Populus balsamifera*), the birch, &c. It is largely employed, not only in varnishing the cells of the combs, but as a material for stopping up crevices, coating rugged or irregular portions of the hive, and also the sticks from which the combs are pendent. Sometimes it is spread over the whole or greater portion of the hive-dome, and it is necessary for tempering the wax, so as to make it work more pliantly in the mandibles of the comb-builders.

Bee-bread is the delicate pollen of flowers, and we often see it covering, like a fine powder, the body of the honey-gatherers, who have buried themselves in the deep nectary of the blossom. Carefully is this pollen brushed off the body, wings, and limbs, and kneeded up with nectar into little cakes, which are carried in curious wallets to the hive. These wallets occur on the expanded inner surface of the thighs (middle joint of the leg). A depression there is overarched by a series of elastic hairs, so arranged as to act the part of a wicker lid, and it is here that these delicate cakes are temporarily packed, to be disposed as circumstances may require. Part is eaten by the bees themselves, part is appropriated to the young brood, and the remainder is providently deposited in some empty cells, in order to serve as a future provision.

The importance of the transference of the fertilising pollen from flower to flower by means of the wandering bee is fully appreciated by the botanist.

Wax is a peculiar secretion, lodged in little receptacles beneath the overlapping scales of the abdomen, generally four on each side. We need not say that it is only in the neuters that wax-secreting pockets occur.

Honey is the nectar of flowers lapped out of the nectary by means of the tongue, and immediately transferred to the crop, or honey-bag. The alteration it here undergoes is at most but very trifling; hence the fine flavour and quality of the honey depends most materially upon the botanical character of the bee pasturage. Honey, when disgorged from the "bag o' the bee" into the cell, is so adhesive as not to run out, horizontal as this cell is; moreover, a sort of cream rises and forms a glutinous film, obliquely placed, acting as a sort of transient capsule; when, however, the cell is completely filled, it is covered with a waxen lid.

The honey of some cells is ordinarily used for food, and the cells are kept regularly supplied. Others are store-cells, and it is these that are secured, when filled, by the waxen lid. We may form some conception of the industry of the bee when we learn that it requires the contents of many honey-bags to fill a single cell.

Our hybernating insects are now hastening to their retreats. Some are later in repairing to their domitory than others, and even then, when disturbed before the hard frost thickly sheets the water with ice, appear to be scarcely quite torpid. As our summer birds depart at various periods, so some insects retire earlier than others, and some appear earlier, even as early as March; such is the case with certain small coleoptera, with the remains of which we have found the stomachs of the earliest-arrived of our flocks of wheatears completely filled.

Is it mere cold on the one hand that enforces to hybernation, and mere genial warmth that reanimates the dormant system? We think not: First, because we know that hybernating reptiles and insects revive and become active in spring at a lower temperature of the atmosphere than was the case when the dormitory was entered; and, again, as the experiments of Mangili prove, we find that while a certain degree of cold conduces to this lethargy, a greater reduction of temperature produces reviviscence as speedily as an increase of heat. Mangili placed a torpid marmot, which had been kept in a temperature of 45°, in a jar surrounded with ice and muriate of lime, so that the temperature sunk to 16°. In about half an hour a quickened respiration indicated returning animation. "In sixteen hours it was completely revived. It was trembling with cold, and made many efforts to escape." Other experiments of a similar nature have been tried, and we doubt not that the condition of the brain and nervous system in quadrupeds, and even in reptiles, exerts a potent influence over the phenomena of hybernation. Are insects, because their blood is a mere sanies, and because their nervous system is merely ganglionic, to be regarded as uninfluenced by the very same atmospheric states as are influentional upon their hightier copartners of the surface of our globe? It is true, that of sensibility (we speak of the nerves) they have little; but of muscular irritability and contractility they are, so to speak, moving storehouses. Their gymnastic feats are astounding; arguslike are their powers of vision, and many are ever on the alert. Greatly, as we have said, are they under the dominance of temperature. They rejoice in a glowing sun; they endure the biting frosts of winter; they exhibit striking examples of hybernation, and also of a sort of intermediate state, a partial or semi-hybernation.

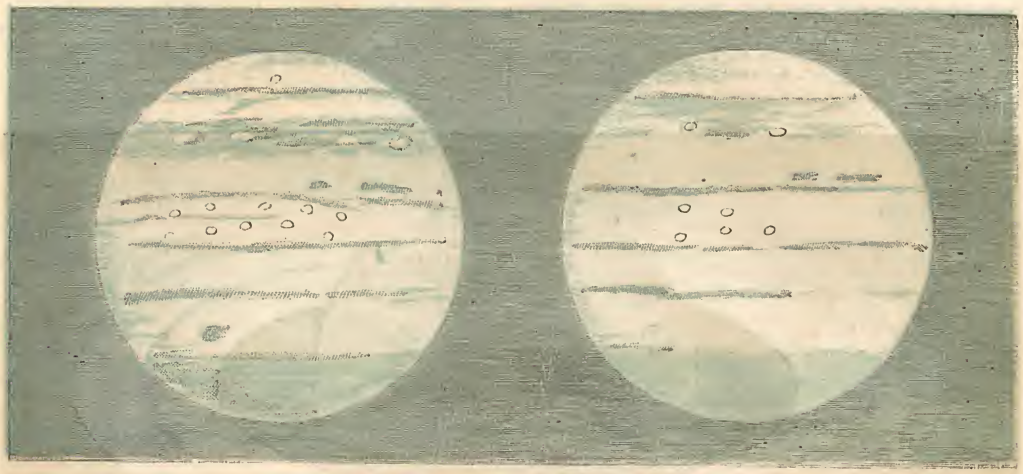
But November is passing. Let us look to our Plate. There are even moths which at this season are to be met with on the wing; they are late flyers, and some most probably hybernate.

We may enumerate, first, the humming-bird hawk-moth (*Macroglossa stellatarum*). Of this interesting species three broods appear every year—viz., April, June, and September, and specimens have been taken as late as Christmas, so that we have reason to believe that many individuals live through the winter. It frequents flower-gardens and shrubberies, flying during the day between the hours of ten and twelve in the morning, and those of two and four in the afternoon. It probes the deepest nectaries, poising itself like the humming-bird on rapidly vibrating wings, and darts from flower to flower with inimitable grace and address. Secondly, The mottled umber-moth (*Hibernia defoliaria*). Of this species the female is wingless, and is ever stationary. Gardens, orchards, and woods are the localities which it frequents, but, like others of the genus *Hibernia*, it only makes its appearance at the fall of the leaf. Thirdly, The sallow moth (*Xanthia cerago*), common throughout Europe and the adjacent parts of the Continent. It is subject to great variety of colour, and the caterpillars are to be found on the birch and willow. The perfect insects appears in August or September, and continues on the wing till November. Each of these we have figured.

Fourthly, The December moth (*P. Populi*), The butterfly is the azure blue, female (*Polyommatus Argiolus*). It is sometimes to be seen late in the year, even as late as the first few days of November.

To these many more might be added, but space forbids.

November is passing away; it is December. The wind sweeps through the leafless trees, with a hollow moan, over wild moorland and through the rocking forest. There is no rippling music on the shingly sea-beach; a storm is brooding, the sky is lowering. Our discursive task is ended. We retreat before the wintry blast; we have no more to say about insects; life languishes. "C'est le baisser du rideau." The curtain has fallen.

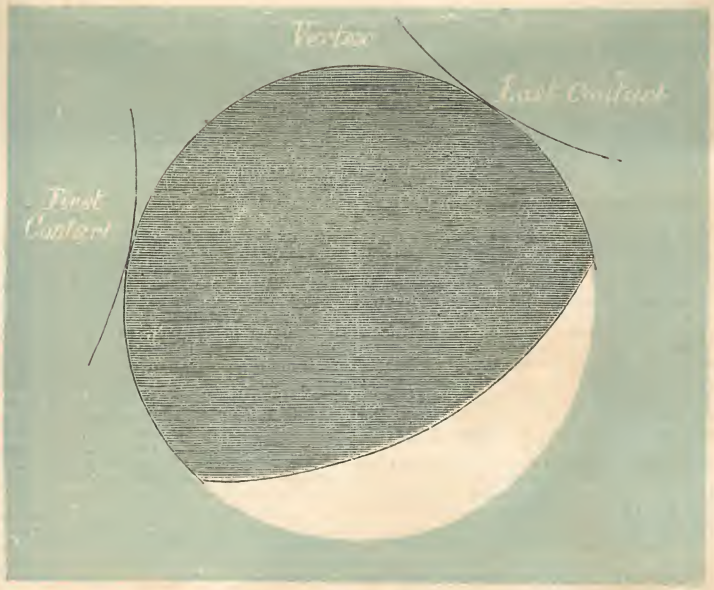


JUPITER IN THE OPPOSITION OF 1859, BY MR. LASSEL.

the 24th. It remains visible during the evenings, setting shortly before midnight at the end of the month. It continues in the constellation of Gemini until the end of the month, when it passes into that of Cancer.

SATURN continues visible during the evenings of this month, and may be seen in the west after twilight, where it is still a conspicuous object in the constellation of Leo, the principal star of that group being a little below and to the left of it. The different colours of those two objects is worthy of remark, Regulus being white and Saturn of a dusk yellow tinge. It arrives in quadrature with the Sun at midnight of the 9th. The Moon passes a little to the south of it at 5h. 54m. P.M. of the 26th.

URANUS is now too near the Sun to be visible to the naked eye, setting shortly after twilight at the beginning of the month, and arriving in conjunction with the Sun on the morning of the 29th. The Moon passes four degrees to the north of Uranus on the morning of the 21st. It still remains in the constellation of Taurus.



LUNAR ECLIPSE OF FEBRUARY 6, 1860.

ECLIPSES OF JUPITER'S SATELLITES.—May 1st, 11h. 55m. 40s. P.M., reappearance of first satellite; May 7th, 8h. 16m. 34s. P.M., reappearance of third satellite; May 14th 8h. 20m. 38s. P.M., reappearance of first satellite; May 14th, 8h. 2m. 56s. P.M., disappearance of fourth satellite; May 14th, 8h. 50m. 10s. P.M., disappearance of third satellite; May 17th, 10h. 15m. 27s. P.M., reappearance of first satellite; May 25th, 8h. 29m. 54s. P.M., reappearance of second satellite.

JUNE.

THE SUN is in the sign of Gemini until 5h. 43m. A.M. of the 21st, when it passes into that of Cancer, and the summer quarter commences. It is at its greatest northerly declination at the above date.

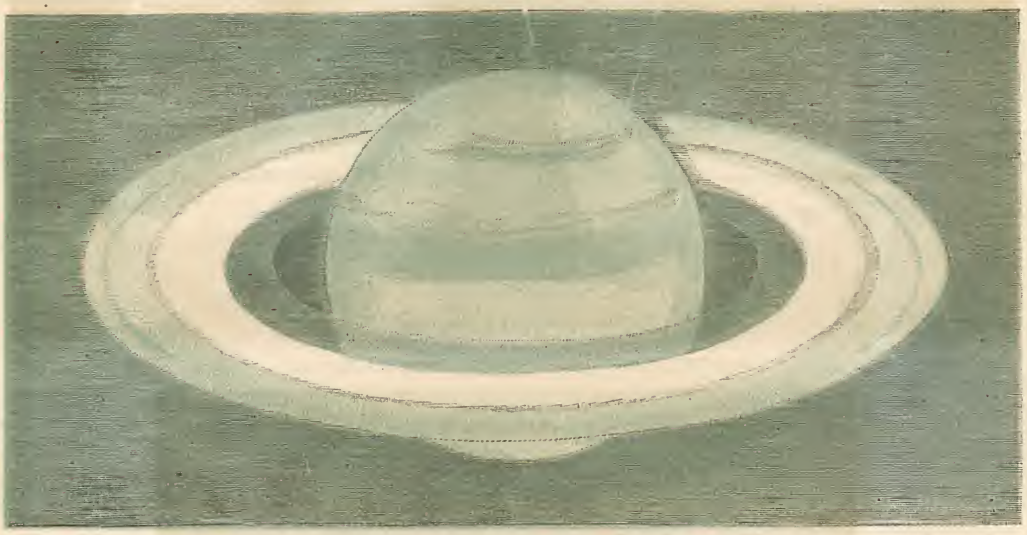
The MOON is a little to the north of Mars at 8h. 28m. A.M. of the 7th, a little to the south of Mercury at 10h. 4m. A.M. of the 20th, it occults Jupiter at 9h. A.M. of the 21st, is close to Venus at 7h. P.M. of the 21st, and to the south of Saturn at 3h. 42m. A.M. of the 23rd. It is at its greatest

DOUBLE STARS, SHOWING REMARKABLE COLOURS.

distance from the Earth at 3h. A.M. of the 11th, and at its least distance at 9h. A.M. of the 23rd

Full Moon occurs at	46 minutes	past	4 on the afternoon of the 3rd.
Last Quarter	,, 4	,,	1 on the afternoon of the 11th.
New Moon	,, 23	,,	5 on the morning of the 19th.
First Quarter	,, 38	,,	midnight on the 25th.

MERCURY passes from the constellation of Taurus to that of Gemini, and finally to that of Cancer, during this month. It is only a distance equal to the semidiameter of the Sun to the north of Uranus on the morning of the 3rd; in perihelion on the afternoon of the 6th, and in superior conjunction to the Sun at 4h. 33m P.M. of the same day. It is close to the Moon at 10h. A.M. of the 20th, being then a little to the north of it, and is about a degree north of Jupiter on the morning of the 29th.



SATURN, BY CAPTAIN JACOB.

It is favourably situated for observation during the evenings of the latter days of the month.

VENUS is now the most brilliant object in the heavens, arriving at its greatest brightness before inferior conjunction with the Sun on the 11th, and being very favourably situated for observation, as it is above the horizon for upwards of sixteen hours at the beginning of the month. It is in the constellation of Gemini at the beginning, and in that of Cancer at the end of the month. It is a little to the north of the Moon on the evening of the 21st: a little to the west of Delta Cancri on the afternoon of the 25th, and is stationary on the morning of the 26th.

MARS is now a brilliant object in the S. and S.E late at night; but its brightness is much obscured by its small altitude above the horizon. It is situated on the confines of the constellations of Sagittarius and Capricornus, where it remains nearly stationary. It is situated a little to the south of the Moon on the morning of the 7th, and is stationary on the morning of the 18th.

JUPITER is now fading rapidly from view, and resigns its position as the evening star to the more brilliant Venus. It will scarcely be visible after the present month, southing early in the afternoon, and setting shortly after the Sun, but during the twilight. It remains in the constellation of Cancer during this month. It is very close to the Moon on the morning of the 21st, and is a little to the south of Mercury on the night of the 28th.

SATURN is still visible during this month, but is fast disappearing from sight, setting shortly after twilight on the latter days of the month. It remains in the constellation of Leo during June. It is near the Moon on the morning of the 23rd.

URANUS is invisible during the month of June, and is still in the constellation of Taurus, It is four degrees south of the Moon on the evening of the 17th.

ECLIPSES OF JUPITER'S SATELLITES.—June 1st, 11h. 4m. 39s. P.M., reappearance of second satellite; June 2nd, 8h. 34m. 54s. P.M., reappearance of first satellite; June 9th, 10h. 30m 7s. P.M., reappearance of first satellite.

JULY.

THE SUN is in the sign of Cancer until 4h. 36m. P.M. of the 22nd, when it passes into that of Leo. It remains north of the Equator throughout this month. It is at its greatest distance from the Earth at 8h. 49m. P.M. of July 1. An eclipse occurs on the 18th visible at Greenwich.

The MOON is a little to the north of Mars at 2h. 40m. P.M. of the 4th, of the north of Uranus at 8h. 49m. A.M. of the 15th, to the north of Venus at 1h. 38m. P.M. of the 18th, to the south of Jupiter at 4h. 2m. A.M. of the 19th, to the north of Mercury at 10h. 27m. A.M. of the 20th, to the south of Saturn at 4h. 35m. P.M of the 20th, and to the north of Mars at 7h. 55m. A.M. of the 31st. It is at its greatest distance from the Earth at 10h. P.M. of the 8th, and at its least distance at 7h. P.M. of the 20th.

Full Moon occurs at	7 minutes	past	4 on the morning of the 3rd.
Last Quarter	,, 58	,,	5 on the morning of the 11th.
New Moon	,, 19	,,	2 on the afternoon of the 18th.
First Quarter	,, 40	,,	5 on the morning of the 25th.

MERCURY is three degrees north of Venus at 6h. 32m. P.M. of July 1. It is at its greatest easterly elongation on the morning of the 13th, is very close to the Moon on the morning of the 20th, and is stationary on the morning of the 26th. It is situated in the constellation of Cancer at the beginning of the month, and in that of Leo at the end. In the forenoon of the 24th it is situated a little to the east of the star Omicron Leonis.

VENUS still remains the brightest object in the heavens, but is rapidly passing away from sight during the evenings, and at the latter part of the month it changes from its pre-eminence as the evening star to that of the morning star, but does not arrive at its greatest brilliancy as the latter object until the following month. It is in the constellation of Cancer at the beginning, and in that of Gemini at the end, of the month. It is situated to the south of Jupiter on the evening of the 7th, to the south of the Moon on the afternoon of the 18th, is in inferior conjunction to the Sun at 1h. 13m. A.M. of the 19th, and is in aphelion on the morning of the 27th.

PHASES OF SATURN, 1860.

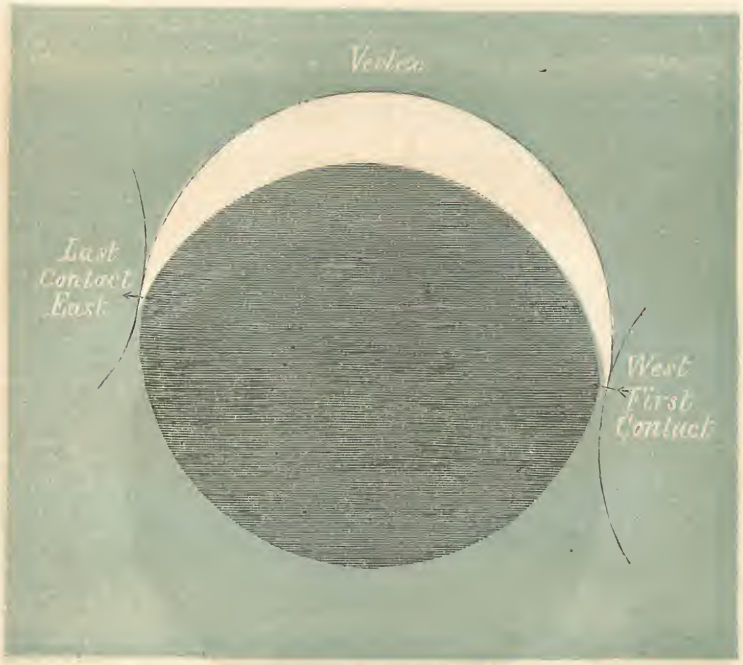
MARS arrives in opposition to the Sun on the afternoon of the 17th, and is now at its brightest period; but, like its position at the last opposition of 1858, it is too low down in our northerly latitudes to be favourably placed for telescopic examination, not being more than ten degrees above the horizon in the central counties of England at its most favourable period at the time of opposition. It is a little to the south of the Moon on the afternoon of the 4th and on the morning of the 31st, and is close to δ Sagittarii between the 20th and 22nd of July. It is

situated on the borders of the constellations of Sagittarius and Capricornus during the month. Its disc is now perfectly circular.

JUPITER is now invisible to the naked eye, setting shortly after the Sun, and in the same part of the heavens. It is situated in the constellation of Cancer throughout July. It is a little to the north of Venus on the evening of the 7th, a little to the north of the Moon on the morning of the 19th, and arrives in conjunction with the Sun shortly before noon of the 29th.

SATURN is now situated *too near* the Sun to be visible to the naked eye, setting shortly after twilight ends at the beginning of the month, and southing about three hours after the Sun. It continues in the constellation of Leo throughout this month. At 4h. 35m. P.M. of the 20th it is situated about four degrees north of the Moon.

URANUS again becomes visible during the latter days of July, rising shortly before midnight on the 31st. It is near the Moon on the morning of the 15th. It continues in the constellation of Taurus during this month.



GREAT SOLAR ECLIPSE OF JULY 18, 1860.

ECLIPSES OF JUPITER'S SATELLITES.—The satellites of Jupiter are invisible during this month.

AUGUST.

THE SUN is north of the Equator during the month, and remains in the sign of Leo until 11h. 9m. P.M of the 22nd, when it passes into that of Virgo.

THE ZODIACAL LIGHT AT THE CAPE OF GOOD HOPE.

The MOON is a little to the north of Uranus at 7h. 56m. P.M. of the 11th, to the north of Venus at 10h 28m. A.M. of the 14th, to the south of Jupiter at 39 minutes past midnight of the 15th, to the north of Mercury at 4h. 16m. A.M. of the 16th, to the south of Saturn at 8h. 6m. A.M. of the 16th, and to the north of Mars at 10h. 9m. A.M. of the 27th. An eclipse of the Moon occurs on the 1st of August, which is invisible at Greenwich. The Moon is at its greatest distance from the Earth at 1h. P.M. of the 5th, and at its least distance at 11h. P.M. of the 17th.

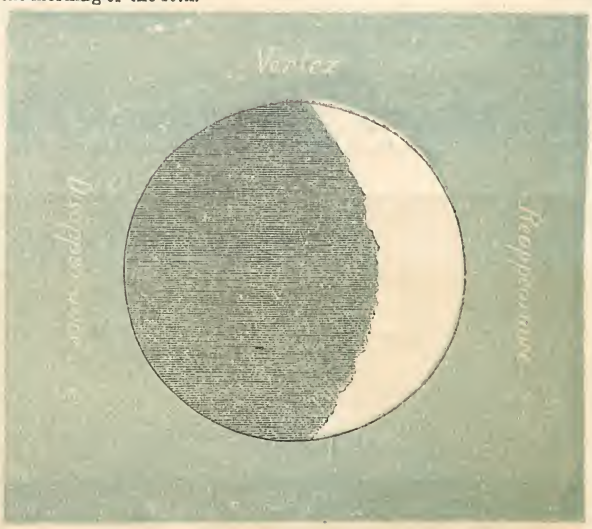
Full Moon occurs at 33 minutes past 5 on the afternoon of the 1st. Last Quarter occurs at 23 minutes past 9 on the evening of the 9th. New Moon occurs at 19 minutes past 10 on the evening of the 16th. First Quarter occurs at 49 minutes past noon of the 23rd. Full Moon occurs at 57 minutes past 8 on the morning of the 31st.

MERCURY is in inferior conjunction to the Sun on the morning of the 10th, is a little to the south of the Moon on the morning of the 16th, is stationary on the afternoon of the 19th, and is at its greatest westerly elongation on the afternoon of the 27th. It is situated in the constellation of Leo throughout the month, and is favourably situated for observation during the mornings.

VENUS is now the morning star, and is the brightest object in the heavens. It arrives at its greatest brilliancy on the 23rd, and is very favourably situated for observation. It is stationary on the morning of the 9th, and south of the Moon on the morning of the 14th. It is in the constellation of Gemini at the beginning, and in that of Cancer at the end of the month.

MARS is visible throughout the evenings of this month, and is a conspicuous object both from its colour and brightness low down in the southern heavens. It again arrives at its stationary point after opposition on the night of the 18th, and is to the south of the Moon on the morning of the 27th. It is situated in the constellation of Sagittarius throughout this month.

JUPITER may be seen in the early mornings of the latter days of August, rising in the N.E. at about 3h. A.M. It is situated in the constellation of Cancer throughout this month. It is a little to the north of the Moon on the morning of the 16th.



OCCULTATION OF JUPITER BY THE MOON, MAY 24, 1860.

SATURN is now invisible to the naked eye, arriving in conjunction with the Sun shortly before noon of the 22nd. It is in the constellation of Leo throughout the month, and on the 7th of August it is almost exactly a degree north of Regulus. On the morning of the 17th it is four degrees to the north of the Moon.

URANUS is visible late at night, not rising until 10h. P.M. at the latter part of the month. It is near the Moon on the evening of the 11th. It is still situated in the constellation of Taurus.

The SATELLITES of JUPITER are invisible during this month.

SEPTEMBER.

THE SUN is north of the Equator, and in the sign of Virgo until 7h. 53m. P.M. of the 22nd, when it passes into that of Libra, and is south of the Equator. The autumn quarter commences at the above date.

The MOON is a little to the north of Uranus at 4h. 44m. A.M. of the 8th, to the north of Venus at 11h. 29m. P.M. of the 11th, to the south of Jupiter at 9h. 15m. P.M. of the 12th, to the south of Saturn at 49 minutes past midnight of the 13th, to the south of Mercury at midnight of the 14th, and to the north of Mars at 7h. 24m. A.M. of the 24th. It is at its greatest distance from the Earth at 11 P.M. of the 1st, and at 1 A.M. of the 29th, and at its least distance at 8A.M. of the 15th.

Last Quarter occurs at 7 minutes past 11 on the morning of the 8th. New Moon occurs at 9 minutes past 6 on the morning of the 15th. First Quarter occurs at 24 minutes past 11 on the evening of the 21st. Full Moon occurs at 40 minutes past 1 on the morning of the 30th.

MERCURY is situated in the constellation of Leo at the beginning, and in that of Virgo at the end of the month. It is favourably situated for obervations during the mornings of the first days of the month. It is a little to the east of Alpha Leonis (Regulus), on the afternoon of the 6th, is very close to Saturn on the early morning of the 7th, is six degrees to the north of the Moon shortly before midnight of the 14th, and is in superior conjunction to the Sun on the morning of the 22nd. Its perihelion occurs at noon of the 2nd.

VENUS is in the constellation of Cancer at the beginning of the month, and in that of Leo on September 30th, and is a brilliant object as the morning star, rising in the N E. about one hour and a half after midnight. It is a little to the south of the Moon on the night of the 11th, and arrives at its greatest westerly elongation at noon of the 28th.

MARS continues visible until midnight, and is slightly decreasing in brightness. It passes from the constellation of Sagittarius to that of Capricornus, and continues unfavourably situated in respect to its altitude above the horizon. It is in perihelion on the 16th, and is a little to the south of the Moon on the morning of the 24th.

JUPITER now partakes with Venus the distinction of being the morning star, although it must be considered as a lesser light altogether. It is a little to the north of the Moon on the night of the 12th, and a little to the north of Venus on the morning of the 29th, when their relative light will admit of convenient comparison. It is situated in the constellation of Leo during this *month*.

SATURN becomes visible during the early mornings of the latter days of the month, rising at 3 A.M. It is near the Moon on the morning of the 14th. It is situated a little to the due east of Regulus at the beginning of the month, being then nearly of the same declination.

URANUS is now visible during the evenings, rising shortly before eight o'clock at the latter part of the month, and continues above the horizon throughout the night. It comes into quadrature with the Sun on the morning of the 4th, and arrives at its stationary point before opposition on the morning of the 17th. The Moon passes four degrees to the north of Uranus at 4h. 44m. A.M. of the 8th.

ECLIPSES OF JUPITER'S SATELLITES.—September 8th, 2h 34m. 53s. A.M., disappearance of first satellite; September 15th, 4h. 28m 42s. A.M., disappearance of first satellite; September 27th, 2h. 44m. 8s. A.M., disappearance of second satellite; September 28th, 4h. 6m. 11s. A.M., reappearance of third satellite.

ECLIPSE OF THE SUN IN 1851

OCTOBER.

THE SUN is south of the Equator during this month, and remains in the sign of Libra until 4h. 9m. A.M. of the 23rd, when it passes into that of Scorpio.

The MOON is a little to the north of Uranus at 10h. 42m. of the 5th, to the south of Jupiter at 3h. 46m. P.M. of the 10th, to the south of Venus at 10h. 41m. A.M. of the 11th, to the south of Saturn at 4h. 37m. P.M. of the 11th, to the south of Mercury at 7h. 20m. P.M. of the 15th, and to the north of Mars at 6h. 58m. P.M. of the 22nd. It is at its least distance from the Earth at 7 P.M. of the 13th, and at its greatest distance at 7 A.M. of the 26th.

PHASES OF VENUS DURING 1860.

Last Quarter occurs at	4	minutes past	11	on the evening of the 7th.
New Moon	,, 37	,,		2 on the afternoon of the 14th.
First Quarter	,, 10	,,		2 on the afternoon of the 21st.
Full Moon	,, 49	,,		6 on the afternoon of the 29th.

MERCURY is in the constellation of Virgo at the beginning of the month, whence it passes to that of Libra, and finally to that of Scorpio. It is situated a little to the west of Delta Scorpii on the morning of the 30th, is a little to the north of the Moon on the evening of the 15th, and is in Aphelion on the morning of the 16th. It is most favourably situated for observation in the afternoon at the end of the month.

VENUS continues favourably situated as the morning star, and remains the most brilliant object in that part of the heavens. It presents a phase similar to that of the Moon, when half full at the beginning of the month. It is a little to the north of the Moon on the morning of the 11th, a little to the west of Rho Leonis on the morning of the 12th, and a little to the south of Saturn on the night of the 14th. It is situated in the constellation of Leo at the beginning, and in that of Virgo at the end, of the month.

MARS remains in the constellation of Capricornus during this month, and continues visible during the evenings, but, although its altitude is increasing at the time of Meridian passage, it has diminished sensibly in size and brightness during the last two months, although still a conspicuous object in the southern heavens. It is four degrees south of the Moon on the evening of the 22nd.

TELESCOPIC APPEARANCE OF MOON.—FROM A DRAWING BY J. BREEN.

JUPITER is situated in the constellation of Leo during October, and rises shortly after midnight on the latter days of the month. It is situated to the north of the Moon on the afternoon of the 10th.

SATURN is now visible in the constellation of Leo late at night, rising shortly before 3 at the beginning of the month, and shortly after 1 at the end of the month. It is near the Moon on the evening of the 11th.

URANUS is now visible throughout the night, and is favourably situated for observation. It still remains in the constellation of Taurus. It is near the Moon on the forenoon of the 5th.

ECLIPSES OF JUPITER'S SATELLITES.—October 1st, 2h. 44m. 23s. A.M., disappearance of first satellite; October 4th, 5h. 18m. 46s. A.M., disappearance of second satellite; October 5th, 4h. 31m. 35s. A.M., disappearance of third satellite; October 8th, 4h. 37m. 52s. A.M., disappearance of first satellite; October 17th, 0h. 59m. 39s. A.M., disappearance of first satellite; October 24th, 2h. 52m. 57s. A.M., disappearance of first satellite; October 29th, 2h. 20m. 26s. A.M., disappearance of second satellite; October 31st, 4h. 46m. 10s. A.M., disappearance of first satellite

NOVEMBER.

THE SUN is south of the Equator throughout this month, and remains in the sign of Scorpio until 0h. 53m. A.M. of the 22nd, when it passes into that of Sagittarius.

The MOON is a little to the north of Uranus at 2h. 56m. P.M. of the 1st, to the south of Jupiter at 6h. 5m. A.M. of the 7th, to the south of Saturn at 5h. 23m. A.M. of the 8th, to the south of Venus at 4h. 51m. A.M. of the 10th, to the south of Mercury at 2h. 39s. P.M. of the 14th, to the north of Mars at 2h. 59m. P.M. of the 20th, and to the north of Uranus at 7h. 30m P.M. of the 28th. It is at its least distance from the Earth at 3 A.M. of the 11th, and at its greatest distance at 11 P.M. of the 22nd.

THE PLANET MARS IN THE OPPOSITION OF 1858.

Last Quarter occurs at	17 minutes past	9	on the morning of the 6th.
New Moon	,, 36	,,	midnight of the 12th.
First Quarter	,, 53	,,	8 on the morning of the 20th.
Full Moon	,, 37	,,	11 on the morning of the 28th.

MERCURY remains in the constellation of Scorpio during this month, and is most favourably situated for observation at the beginning of it. It is at its greatest easterly elongation on the afternoon of the 7th, is a little to the north of the Moon on the afternoon of the 14th, is stationary on the morning of the 18th, is in inferior conjunction to the Sun on the morning of the 28th, and in perihelion on the morning of the 29th.

VENUS still remains a conspicuous object in the east and south-east in the early mornings of this month, rising shortly before three on November 1st, and shortly after 4 A.M. on the 30th. It is in the constellation of Virgo during November, and presents a gibbous phase in the telescope. It is situated a little to the east of Beta Virginis on the evening of the 1st, a little to the east of Eta Virginis on the evening of the 7th, to the north of the Moon on the morning of the 10th, to the east of Theta Virginis on the morning of the 19th, and is in perihelion on the afternoon of the 15th.

MARS still remains visible during this month, setting nearly at the same minute, although not at the same point of the horizon on each evening. It is situated in the constellation of Capricornus at the beginning, and in that of Aquarius at the end of the month. It is close to Gamma Capricorni on the night of the 2nd, and to Delta Capricorni on the morning of the 5th. On the afternoon of the 14th it is close to Iota Aquarii, and on the days of the 25th and 26th to the Sigma Aquarii. It is five degrees to the south of the Moon on the afternoon of the 20th, and in quadrature to the Sun on the afternoon of the 23rd. Its form is now perceptibly gibbous, the relative diameters being in the proportion of 85 to 100.

JUPITER now becomes a very conspicuous object during the night, and remains in the constellation of Leo throughout this month. It is situated about a degree to the north of the principal star (Regulus) of that group, and changes its position but slightly. It is a little to the north of the Moon at 6 A.M. of the 7th, and is in quadrature with the Sun on the morning of the 18th.

SATURN is now visible during the night, and rises before midnight on the latter days of the month. It still remains in the constellation of Leo. The Moon passes five degrees and a half to the south of Saturn at 5h. 23m. A.M of the 8th. On the night of the 30th it comes into quadrature with the Sun.

VIEW OF THE MOON'S DISC.—FROM A PHOTOGRAPH TAKEN WITH THE NORTHUMBERLAND TELESCOPE BY J. BREEN.

URANUS is visible throughout the night, and is favourably situated in the constellation of Taurus. The Moon passes three degrees and a half to the north of Uranus on the afternoon of the 1st, and at 7h. 30m. P.M. of the 28th.

ECLIPSES OF JUPITER'S SATELLITES.—November 2nd. 11h. 55m. 56s. P.M., reappearance of third satellite; November 5th. 4h. 55m. 31s. A.M., disappearance of second satellite; November 7th, 6h. 39m. 19s. A.M., disappearance of first satellite; November 9th, 1h. 7m. 35s. A.M., disappearance of first satellite; November 10th, 0h. 20m. 55s A.M., disappearance of third satellite; November 10th, 3h. 34m. 21s. A.M., reappearance of third satellite; November 15th, 2h. 10m. 44s. A.M., disappearance of fourth satellite; November 15th, 6h. 56m. 16s. A.M., reappearance of fourth satellite; November 16th. 3h. 0m. 41s. A.M., disappearance of first satellite; November 17th, 4h. 18m. 34s. A.M., disappearance of third satellite; November 22nd, 11h. 24m. 13s. P.M., disappearance of second satellite; November 23rd, 4h. 53m. 45s. A.M., disappearance of first satellite; November 24th, 11h. 22m. 1s. P.M., disappearance of first satellite, November 30th, 1h. 59m. 45s. A.M., disappearance of second satellite; November 30th, 6h. 46m. 48s. A.M., disappearance of first satellite.

DECEMBER.

THE SUN is south of the Equator during this month, and remains in the sign of Sagittarius until 1h. 51m. P.M. of the 21st of December, when it passes into that of Capricornus, and the winter quarter commences. It is at its least distance from the Earth at 2h. 41m. A.M. of the 31st.

The MOON is a little to the south of Jupiter at 3h. 14m. P.M. of the 4th, to the south of Saturn at 2h. 4m. P.M. of the 5th, to the south of Venus at 10h. 35m. P.M. of the 9th, to the south of Mercury at 2h. 24m. A.M. of the 11th, to the north of Mars at 2h. 55m. P.M. of the 19th, to the north of Uranus at 1h. 52m. A.M. of the 26th, and to the south of Jupiter at 8h. 15m. P.M. of the

31st. It is at its least distance from the Earth at 8 P.M. of the 8th, and at its greatest distance at 7 P.M. of the 20th.

Last Quarter occurs at 59 minutes past 5 on the afternoon of the 5th.
New Moon ,, 47 ,, noon of the 12th.
First Quarter ,, 10 ,, 6 on the morning of the 20th.
Full Moon ,, 17 ,, 3 on the morning of the 28th.

MERCURY is in the constellation of Scorpio at the beginning, and in that of Ophiuchus at the end of the month. It is most favourably situated during the mornings at the middle of the month. It is stationary on the afternoon of the 7th, and near the Moon on the morning of the 11th. It arrives at its greatest westerly elongation on the afternoon of the 16th, and is a little to the east of Nu Scorpii on the afternoon of the 17th.

VENUS still continues the morning star, and remains a conspicuous object in the S.E. during the mornings, although it has considerably waned in lustre. It was in the constellation of Virgo at the beginning of the month, in that of Libra at the middle, and in that of Scorpio at the end, of the month. It is situated to the north of the Moon on the night of the 9th, is close to the Nu Scorpii on the night of the 26th, a little to the east of Beta Scorpii on the morning of the 28th, and close to Psi Ophiuchi on the morning of the 29th.

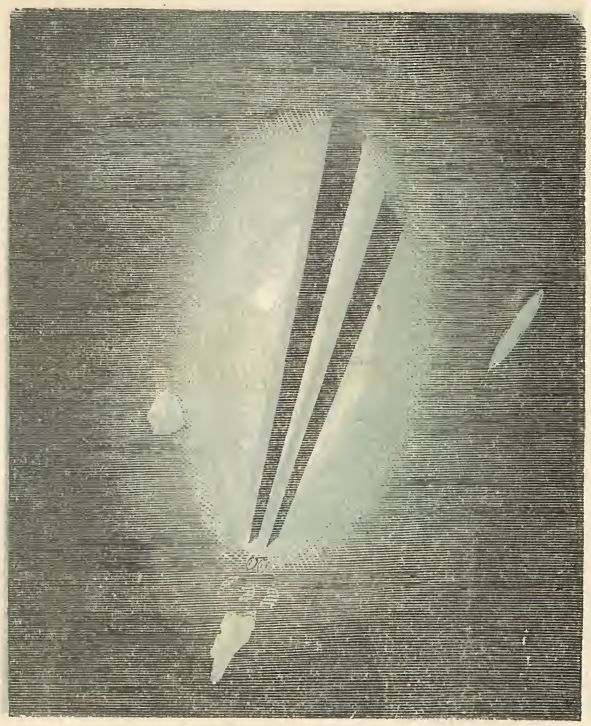
MARS is in the constellation of Aquarius at the beginning, and in that of Pisces at the end, of the month, setting nearly at the same moment of time on each evening—viz., at 11h 6m. P.M. It is near Lambda Aquarii on the evening of the 7th, near Phi Aquarii on the night of the 12th, and is south of the Moon on the afternoon of the 19th.

JUPITER is now a brilliant object during the night, and continues close to the principal star of Leo throughout the month. It is a little to the north of the Moon on the afternoon of the 4th, and is four degrees and a quarter to the north of it at 8h. 15m. P.M. of the 31st. It arrives at the stationary point before opposition on the morning of the 13th.

SATURN is now visible late at night, and remains so during the whole of the early mornings. It is still situated in the constellation of Leo, to the east and south of the principal star (Regulus) of that group. It is near the Moon on the evening of the 5th, and arrives at its stationary point before opposition on the evening of the 20th.

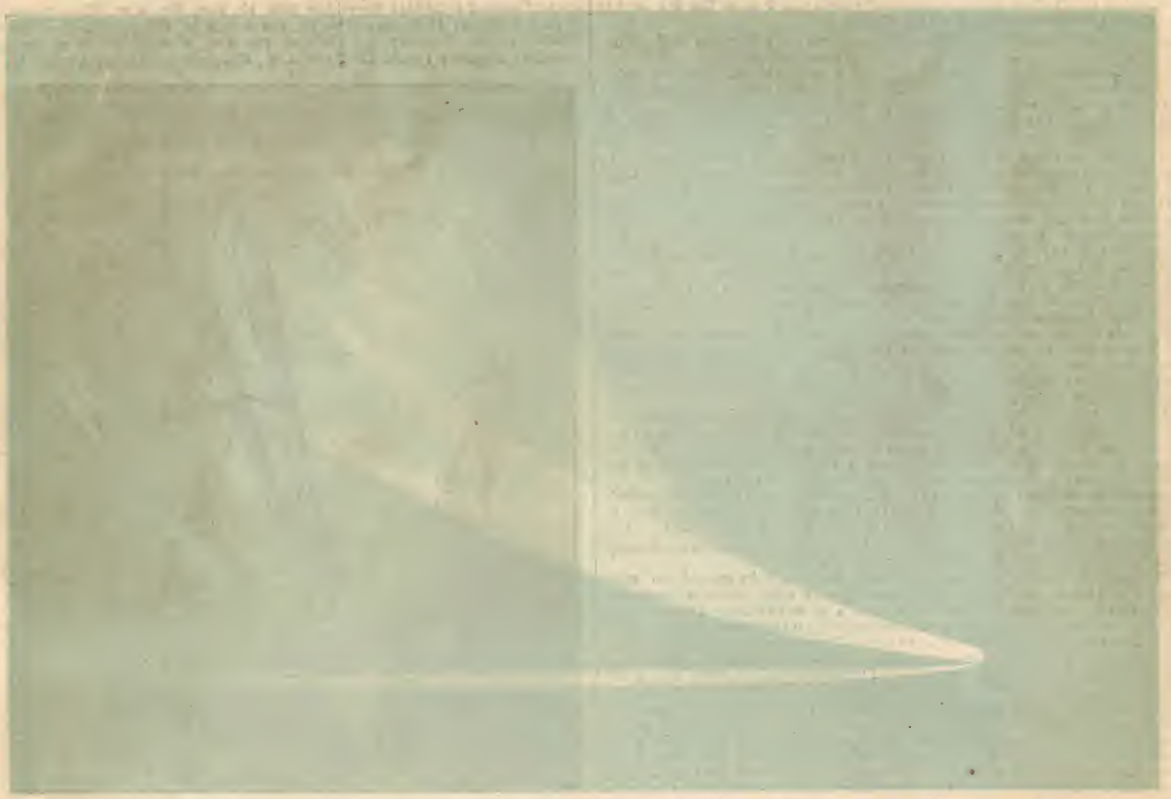
URANUS is now very favourably situated, coming into opposition with the Sun at 11 P.M. of the 1st. The Moon passes three degrees forty-one minutes to the north of Uranus at 1h. 52m. A.M. of the 26th. It is situated in the constellation of Taurus, and remains visible throughout the night.

ECLIPSES OF JUPITER'S SATELLITES.—December 2nd, 0h. 55m. 42s. A.M., reappearance of fourth satellite; December 2nd, 1h. 15m. 48s., A.M., disappearance of first satellite; December 7th, 4h. 35m 25s. A.M., disappearance of second satellite; December 9th, 3h. 8m. 6s. A.M., disappearance of first satellite; December 10th, 9h. 36m. 21s. P.M., disappearance of first satellite; December 14th, 7h. 11m. 12s. A.M., disappearance of second satellite; December 15th, 11h. 42m. 19s. P.M., reappearance of third satellite; December 16th, 5h. 1m. 10s. A.M., disappearance of first satellite; December 17th, 11h. 29m. 26s. P.M. disappearance of first satellite; December 23rd, 0h. 6m. 21s. A.M., disappearance of third satellite; December 23rd, 6h. 54m. 16s. A.M., disappearance of first satellite; December 24th, 11h 4m. 35s. P.M., disappearance of second satellite; December 25th, 1h. 22m. 32s. A.M., disappearance of first satellite; December 30th, 4h. 4m. 42s. A.M., disappearance of third satellite; 1861, January, 1st. 1h. 40m. 42s. A.M., disappearance of second satellite; January 1st 3h. 15m. 42s. A.M., disappearance of first satellite.

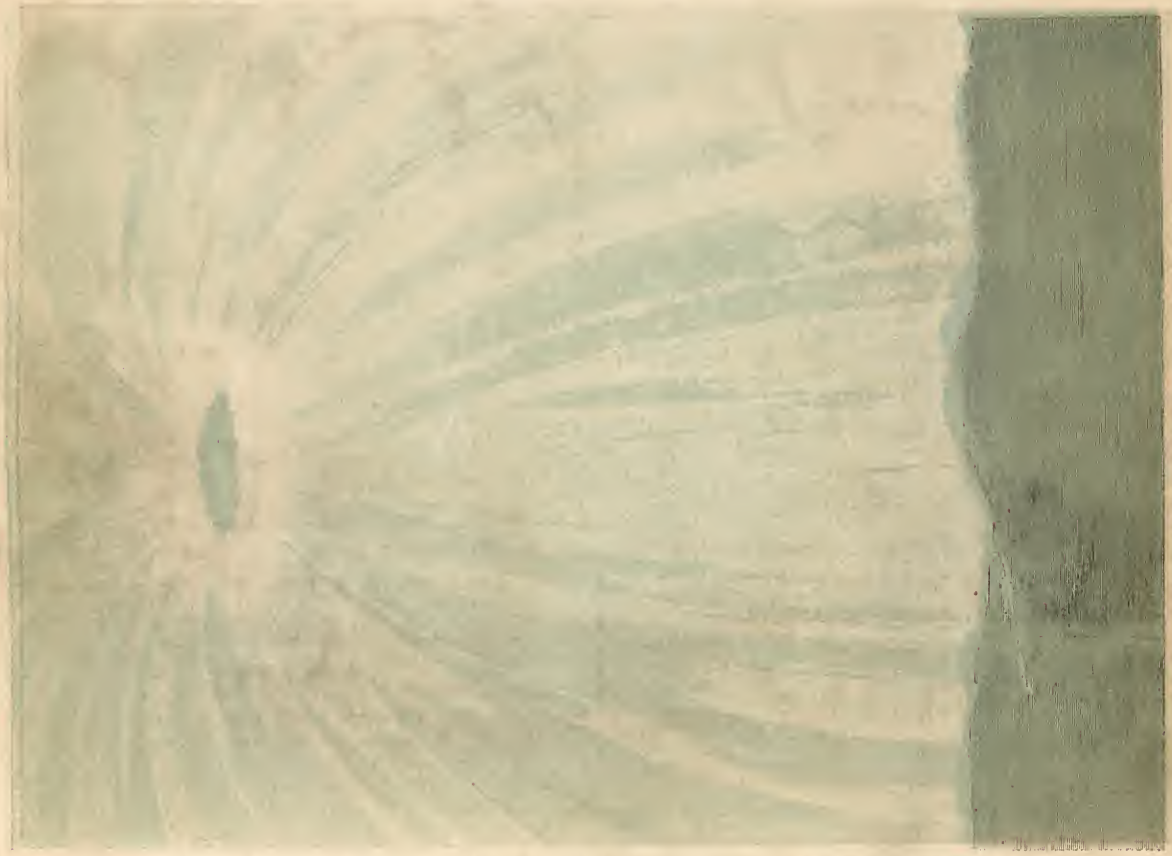


NEBULA IN ANDROMEDA.

GROUP OF STARS DESCRIBED BY SIR J. HERSCHEL AS RESEMBLING A SUPERB PIECE OF FANCY JEWELLERY.



DONATI'S COMET ON OCTOBER 8, 1858.—FROM A DRAWING BY MR. BOND.



AURORA BOREALIS IN 1849.—FROM A DRAWING BY J. BREEN.

CATERPILLAR OF THE GOATS-HEAD MOTH IN WILLOW-TREE.

CHRYSALIS OF THE CABBAGE BUTTERFLY.

PAINTED LADY (UPPER AND UNDER SIDE).

SULPHUR BUTTERFLY (UPPER AND UNDER SIDE).

CLOUD OF GNATS.

JANUARY AND FEBRUARY

COMMON BEES.

SMALL WHITE CABBAGE
(UPPER AND UNDER SIDE).

COMMON HUMBLEBEES AND NEST.

EDUSA.

LARGE WHITE CABBAGE
(MALE AND FEMALE).

A COMMON SNAIL.

LARGE HUMBLEBEE.

MARCH AND APRIL

PURPLE EMPEROR
(UPPER AND UNDER SIDE).
DRAGONFLY EMERGING FROM PUPA-CASE.

BUFFTIP
(UPPER AND UNDER SIDE).
DRAGONFLY.

TORTOISESHELL.
PEACOCK.

ROSE BEETLE.

MAY AND JUNE

STAG-BEETLE.
SWALLOWTAIL BUTTERFLY.
LACE-WING MOTH.

TIGER BEETLE.
DEATH'S-HEAD MOTH.
TIGER MOTH.

JULY AND AUGUST

78

TANIRA (HEATH BUTTERFLY). SPIDER AND WEB. WASPS.
MAGERA (WALL BROWN). GREAT DYSTICTUS (WATER BEETLE). ADONIS (UPPER AND UNDER SIDE).

SEPTEMBER AND OCTOBER

HOLLY BUTTERFLY (UPPER AND UNDER SIDE).
DECEMBER MOTH.

SWALLOW MOTH
BRINDLED UMBER MALE AND WINGLESS FEMALE.
HUMMING-BIRD MOTH.

NOVEMBER AND DECEMBER